Powder River Canyon Geographic Unit
Grazing Permit Renewal
Environmental Assessment

DOI-BLM-OR-V050-2013-043-EA

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1 INTRODUCTION

1.1 Decision to be Made and Location of Proposed Action

The Bureau of Land Management (BLM) proposes to modify grazing management practices with renewal of a 10-year grazing permit for a livestock producer in one allotment located in the Baker Resource Area within the BLM Vale District. The modifications in grazing would be the appropriate action taken pursuant to 43 Code of Federal Regulations (CFR) 4180.2(c). The allotment is located in Baker County, northeast of Baker City, and is within Powder River Canyon Geographic Unit (GU), which includes seven grazing allotments and covers about 5,946 acres of public land as described in the Baker Resource Management Plan (RMP) (U.S. Department of the Interior [USDI] 1989). See Map 1 for the location of Powder River Canyon GU and allotments.

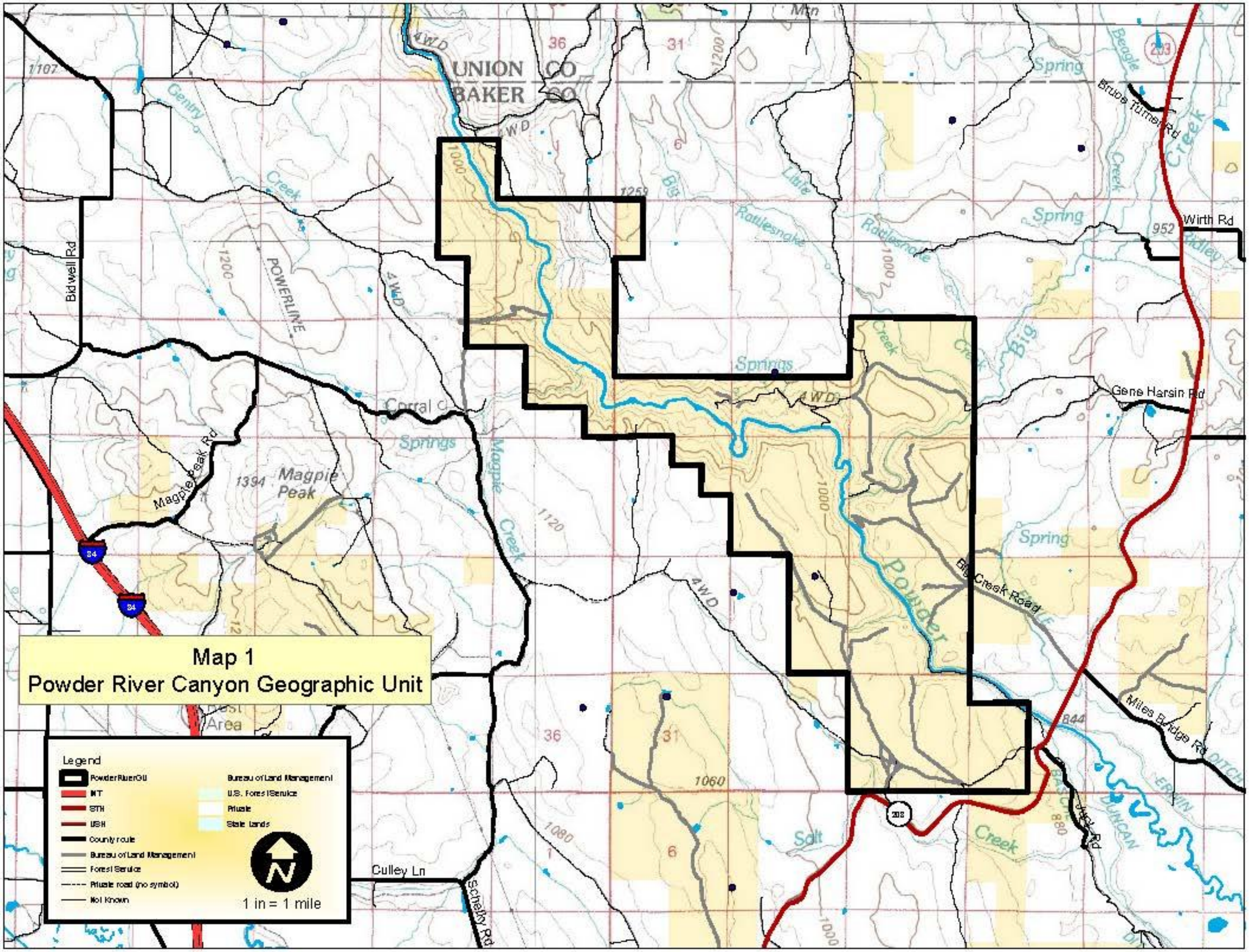
Terms and conditions for the grazing permit would be developed to conform to the Standards for Rangeland Health and Guidelines for Livestock Management for Public Lands Administered by the BLM in the States of Oregon and Washington (S&Gs) (USDI 1997), the Baker RMP (USDI 1989) management objectives, and the decisions resulting from this Environmental Assessment (EA). Refer to Appendix 1 for a summary of the rangeland health standards and livestock management guidelines provided in the S&Gs (USDI 1997).

Evaluations of each allotment in Powder River Canyon GU, based on 2006 field inspections and other available information, were completed in 2007 to determine whether rangeland health standards were being met. These evaluations are available in the Baker Field Office. Determinations were made that six allotments met all rangeland health standards and these six allotments were addressed in Determinations of National Environmental Policy Act (NEPA) Adequacy (DNAs) OR-030-07-007 and DOI-BLM-OR-V050-2009-011-DNA. The remaining one allotment, Salt Creek Allotment, did not meet all rangeland health standards and is addressed in this Environmental Assessment (EA). See Table 1 for preliminary results of final determinations, which will be will be completed in 2014.

Table 1. Summary of Rangeland Health Standards Evaluation and Determinations for Salt Creek Allotment, Powder River Canyon GU

Allotment # – Name **Pasture Name**	**Standard 1-** watershed function, uplands	**Standard 2-** watershed function, riparian	**Standard 3-** ecological processes	**Standard 4-** water quality	**Standard 5-** native, threatened and endangered (T&E), or locally important species
02019-Salt Creek					
Middle	Met	NA	Met	NA	Met
South	Met	NA	Met	NA	Met
Whiskey Gulch	Met	***Not Met**	Met	***Not Met**	Met
***Not Met** Indicates rangeland health standards are not being met due to current livestock grazing					

Salt Creek Allotment covers a total of 4,328 acres, 1,963 acres of which are public lands and 2,365 acres are private lands. The BLM oversees livestock grazing on the public land portion of the allotment. In addition to Whiskey Gulch Pasture, which did not meet all rangeland health


Map 1
Powder River Canyon Geographic Unit
Legend
PowderRiverGU
INT
STH
USH
County route
Bureau of Land Management
Forest Service
Private road (no symbol)
Not Known
Bureau of Land Management
U.S. Forest Service
Private
State Lands
1 in = 1 mile
UNION CO
BAKER CO
Bidwell Rd
POWERLINE
Magpie Peak Rd
Magpie Peak
1394
Corral
Springs
Magpie Creek
Gentry Creek
Big Rattlesnake
Little Rattlesnake
Powder
Spring
Wirth Rd
Gene Harsin Rd
Big Creek Road
Miles Bridge Rd
Bruce Turner Rd
Beagle Creek
Big Creek
Culley Ln
Shelby Rd
Salt Creek
Creek
Rest Area
4WD
84
203
Mtn
1000
1060
1080
1120
1200
952
844
880

standards, the allotment includes two other pastures: Middle and South pastures. Whiskey Gulch Pasture consists of 866 acres of BLM-administered public lands (there are no private lands in the pasture), Middle Pasture consist of 1,811 acres (730 acres of public lands and 1,081 acres of private lands), and South Pasture consist of 1,651 acres (367 acres of public lands and 1,284 acres of private lands). Map 2 shows the location of all three pastures in Salt Creek Allotment.

1.2 Purpose and Need

The purpose of the action is to modify current livestock grazing practices on Salt Creek Allotment by adjusting levels of livestock use or project development (e.g., through riparian exclosure and water troughs) to make significant progress towards meeting rangeland health standards where livestock grazing management practices and levels of grazing use have been identified as significant factors in failing to achieve those standards. The need for this action is to make significant progress towards meeting rangeland health standards at the GU level, which is required under 43 CFR 4180.2. Final determinations completed in 2012 identified that rangeland health standards were not being met in Whiskey Gulch Pasture of Salt Creek Allotment, as shown in Table 1 and described in the affected environment discussion below.

1.3 Background

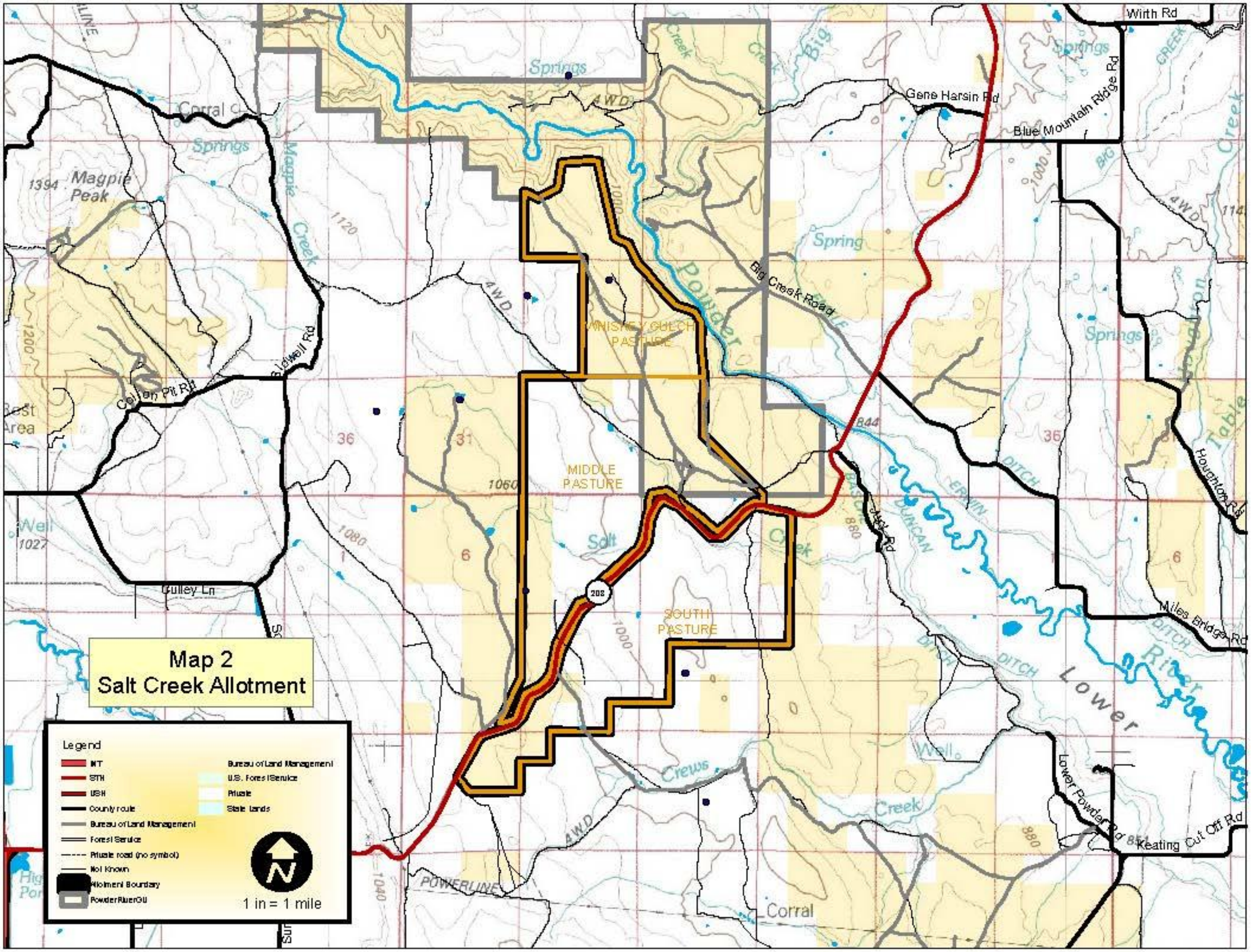
In accordance with public land grazing regulations 43 CFR 4130.2, grazing permits authorize use on the public lands and other BLM-administered lands that are designated in land use plans as available for livestock grazing. Permits specify the grazing preference, including active and suspended use. Public land grazing permits also specify terms and conditions. The term of a grazing permit authorizing livestock grazing on public lands is 10 years, unless certain exceptions apply.

Allotments in the Baker Resource Area are periodically evaluated relative to rangeland health standards. A prioritization schedule for initiation of assessments of grazing authorizations within GUs of the Baker Resource Area was established in the Planning Update of February 2000. In following this schedule, permits were reviewed in Powder River Canyon GU.

1.4 Scoping and Responses to Assessment/Evaluation Comments

The BLM first established proposed priorities for GU evaluations and for preparations of coordinated activity plans in the Baker RMP (USDI 1989). The Planning Update of February 2000 refined this direction to focus on BLM's Healthy Rangelands Initiative (H-4180-1). The planning update established the schedule for evaluation of the GUs using process outlined in the S&Gs.

The livestock permittees in Powder River Canyon GU allotments were informed about the field work being done in their allotments in 2006, which included rangeland utilization and trend monitoring, proper functioning condition (PFC) assessments, and rangeland health assessments, and were provided the opportunity to be involved. The monitoring and assessments were done by multiple members of BLM’s staff over several trips to the allotments. The permittees did not participate in these data-gathering efforts.


Map 2
Salt Creek Allotment
Legend
Bureau of Land Management
U.S. Forest Service
Private
State Lands
County route
Forest Service
Private road (no symbol)
Not Known
Allotment Boundary
PowderRiverGU
1 in = 1 mile
MIDDLE PASTURE
SOUTH PASTURE
Wirth Rd
Gene Harsin Rd
Blue Mountain Ridge Rd
Big Creek Road
Bidwell Rd
Gulley Ln
Keating Cut Off Rd
Miles Bridge Rd
Houghton Rd
Magpie Peak
Lower Powder River

Letters notifying the public, newspapers, permittees, other agencies, and tribal representatives regarding the rangeland evaluation process and the upcoming public meeting were sent out in late April 2009. The BLM offered to meet individually with the tribes involved. A public meeting was held on May 5, 2009 in Baker City, Oregon, to provide an overview of the process, distribute the evaluation and draft determinations documents, and to answer questions. The BLM accepted comments on the evaluation and determinations document at the public meeting and 30 days subsequent to the meeting. No written comments or proposals were submitted to the BLM specific to the Salt Creek Allotment.

1.5 Conformance with Existing RMP, Management Objectives

Alternatives 2, 3 and 4 in this EA conform to the Baker RMP (USDI 1989). Alternative 1, which is the No Action Alternative, no longer conforms to the Baker RMP because it does not meet the resource condition objectives for riparian vegetation and does not protect and preserve cultural resources for their information potential and public values.

The following resource condition objectives, land use allocations, and management actions for Powder River Canyon GU that were identified in the Baker RMP (USDI 1989, p 97-99) guide this EA.

1.5.1 Resource Condition Objectives

Riparian Vegetation

- Maintain/enhance vegetation (canopy coverage, diversity-quantity, quality) in riparian habitat for fisheries.

Cultural Resources

- Protect and preserve cultural resources for their information potential and public values.
- Maintain or enhance the condition of a representative sample of prehistoric resources.

1.5.2 Land Use Allocations

Riparian Vegetation

- Exclude livestock grazing in identified stream segments, bogs, and spring overflow areas.

Cultural Resources

- Identify uses for specific cultural properties in activity plans.
- Restrict or exclude development projects where incompatible with conserving prehistoric resources for scientific uses.

1.5.3 Management Actions

Riparian Vegetation

- Continue riparian surveys.
- Plant shrubs where needed to maintain riparian and fisheries habitat.

Cultural Resources

- Inventory and identify a representative sample of cultural resources in the GU.
- Develop and integrate a Cultural Resource Management Plans with other resource activity plans.
- Evaluate archaeological properties for National Register nomination.
- Conduct periodical patrols and install protection signed to discourage vandalism.
- Annually monitor the condition of cultural properties.
- Prepare and implement protection projects (fencing, stabilization) for threatened cultural resources.

2 DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

Alternative actions were formulated to make significant progress towards meeting management objectives and rangeland health standards, which is required under 43 CFR 4180.2(c). Four alternatives are analyzed in this EA, which include the No Action Alternative (Alternative 1) and three action alternatives. The action alternatives include Alternative 2 (No Grazing Alternative), Alternative 3 (Reduced Grazing Alternative), and Alternative 4 (Proposed Action). Table 2 compares the AUMs that would be allowed under each of the alternatives analyzed in this EA.

Table 2. Summary Comparison of BLM AUMs for Each Alternative

Alternative 1		Alternative 2		Alternative 3		Alternative 4	
BLM AUMs	Period of Use	BLM AUMs	Period of Use	BLM AUMs	Period of Use	BLM AUMs	Period of Use
343	04/10-8/27, 10/10-11/18	0	N/A	159	04/10-8/27, 10/10-11/18	343	4/10-8/27, 10/10-11/18

2.1 Alternative 1 (No Action Alternative)

Under Alternative 1, the terms and conditions of grazing use would remain unchanged. Animal Unit Months (AUMs) and season-of-use would remain at the current active use level. No new fences would be constructed. The current grazing use that would continue under Alternative 1 is presented below in Table 3:

Table 3. Current grazing use for Salt Creek Allotment

Allotment	AUMs Active	AUMs Private	AUMs Total	% Federal Range	Usual Period of Use
Salt Creek #02019	343	0	343	100%	4/10-8/27, 10/10-11/8

The BLM would evaluate the consequences of continuing to authorize livestock grazing in Salt Creek Allotment and make no changes to terms and conditions. Details of current management that would continue under Alternative 1 are detailed in Section 3.8.2, which is the affected environment discussion for rangeland/grazing use.

Also under Alternative 1, upland utilization targets would remain at 50 percent and no minimum herbaceous forage riparian stubble height or utilization would be applied to the riparian areas within this allotment.

2.2 Alternative 2 (No Grazing Alternative)

Under Alternative 2, the BLM would not authorize livestock grazing within the public land portion of the Salt Creek Allotment. In order to eliminate livestock grazing on public lands within Salt Creek Allotment, the permittee would be required to construct five miles of new fence on the public land/private land boundary to prevent livestock grazing.

2.3 Alternative 3 (Reduced Grazing Alternative)

Under Alternative 3, the BLM would not authorize livestock grazing within Whiskey Gulch Pasture of Salt Creek Allotment. Since the perimeter of the pasture is currently fenced, this action would require no additional fences. Within the allotment, overall AUMs would be reduced to 159, which is the amount currently authorized in the South and Middle pastures.

2.4 Alternative 4 (Proposed Action)

The riparian area along the unnamed tributary to Powder River in Whiskey Gulch Pasture is the only area in Salt Creek Allotment that is not meeting rangeland health standards, with livestock grazing being listed as a causal factor. Under Alternative 4, the BLM would require the construction of a 1-mile riparian exclosure fence around the unnamed tributary to eliminate livestock entering the area. This exclosure would encompass 13 acres of Whiskey Gulch Pasture. In addition, the BLM would require the construction of a stock water trough within 50 yards of the exclosure fence and pipe water from the unnamed spring. The BLM would not authorize livestock grazing in Whiskey Gulch Pasture until the fence and water development were constructed to BLM specifications.

2.5 Alternatives Considered but Not Analyzed in Detail

One alternative was identified by the interdisciplinary (ID) team that would reduce livestock AUMs in Whiskey Gulch Pasture to a level that would be consistent with improving Rangeland Health Standards 2 and 4 (see Appendix 1). Additional fencing would not be required. Due to the limited amount of watering sites in the Whiskey Gulch Pasture, the ID team concluded that a reduction in AUMs would not be sufficient to make significant progress towards meeting riparian rangeland health standards in the pasture. Instead, AUMs would need to be eliminated in Whiskey Gulch Pasture. Consequently, this alternative would fundamentally be the same as Alternative 3 and was eliminated from further examination in this EA.

2.6 Design Features Common to All Action Alternatives

Design features are measures or standard operating procedures that are incorporated into all action alternatives. Design features shown below are not a comprehensive list but address topics of normal concern to permittees, tribes, interested public, and participating BLM staff:

1. Wildlife escape ramps (bird ladders) would be installed and maintained in all livestock water troughs to reduce incidence of small animal entrapment and drowning.

2. Noxious weed inventory, treatment, and monitoring would continue.

3. The following conditions would be included in new grazing permits:
   a. Modifications to the grazing permit may be implemented to protect cultural resources under the National Historic Preservation Act (NHPA).
   b. Permit is subject to modification as necessary to achieve compliance with the standards for rangeland health and guidelines for livestock management (43 CFR 4180).

2.7 Design Features under Alternative 4

1. New fences would be installed with proper wire spacing requirements necessary to allow safe passage of pronghorn, mule deer, and elk. All fences would be installed with wire stays to reduce incidence of entanglement and death. All fences would be installed with smooth wire bottom strands to reduce incidence of big game injury.

2. Construction/development of new livestock facilities (e.g., fences and water troughs) in sage-grouse nesting/brooding habitat would be avoided during the peak of breeding and nesting activities (March 1 - June 30) and would be located at least 0.6 mile away from established lek sites in accordance with Oregon's Greater Sage-Grouse conservation strategy (Hagen 2005; Hagen 2011). Fences within one mile of an active lek or known seasonal use area would be marked with anti-strike markers.

3 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This section of the EA presents relevant resource components of the existing environment that are analyzed under each alternative. The format of this section is consistent with resources analyzed in the Baker RMP (USDI 1989), to which this “fine scale” ecosystem-based management planning effort is tiered.

The critical elements of the human environment that would likely be affected by the proposed action include soil and hydrologic resources, vegetation and riparian/wetland areas, noxious and invasive weeds, fish and aquatic habitat, wildlife and special status species habitat, cultural resources, rangeland/grazing use, and socioeconomics. Other critical elements are not discussed because they are not present in the project area, they are present but not affected by the proposed action, or are present and could be impacted by the proposed project, but such impacts would be negligible. The only exception is climate change. Although impacts to climate change would be negligible under all the alternatives, it is briefly discussed below.

Following a discussion of the Affected Environment (i.e., current conditions) of the critical elements of the human environment that would likely be affected by the proposed action is the environmental impact analysis. That analysis looks at both direct and indirect impacts, as well as cumulative impacts. Direct impacts are caused by an action and occur at the same time and place as the action. Indirect impacts are caused by the action and occur later or farther away but are still reasonably foreseeable. Cumulative impacts are the effects on the environment that result from the incremental impact of the action when added to other past, present, or reasonably foreseeable future actions, regardless of what agency (federal or nonfederal) or person undertakes such other actions. Cumulative impacts can result from individually minor, but collectively significant, actions taking place over a period of time.

3.1 Climate Change

Livestock grazing can affect rangeland carbon levels through changes in plant community and changes in ecosystem processes, but the effects have been variable and inconsistent among the ecosystems studied (Derner and Schuman 2007). Some studies have found that grazing can result in increased carbon storage compared to no grazing due to increased plant turnover and changes in plant species composition (Follett et al. 2001). Many changes in rangeland carbon from different grazing practices do not result in substantial changes in total ecosystem carbon, but are redistributions of carbon, such as from above-ground vegetation to root biomass (Derner and Schuman 2007). Overall, changes in rangeland carbon storage from changes in grazing practices are likely to be small and difficult to predict, especially where a rangeland health assessment has determined that rangeland health standards outlined in the S&Gs (USDI 1997) are being met. Therefore, changes in grazing practices analyzed in this EA would only result in negligible, if any, change in total carbon storage in both the short and long term.

Approximately 55,000 active AUMs of grazing are currently authorized each year on public lands within the Baker Resource Area. This is approximately two percent of the livestock forage consumed annually from all lands within the Baker Resource Area. Assuming an average production of 8 kilograms of methane gas per AUM equals 0.168 metric tons of CO2 per AUM, this level of grazing would result in 9,240 metric tons of CO2 equivalent in greenhouse gas (GHG) emitted each year from livestock use in the Baker Resource Area.

These emissions are so minuscule that the incremental contribution to national and global emissions does not merit reporting under the U.S. Environmental Protection Agency (EPA) rule on mandatory reporting of greenhouse gases, which has a reporting threshold of 25,000 metric tons of CO2 equivalent annually. For comparison purposes 25,000 metric tons of CO2 equivalent a year is approximately 0.0000041 of 1 percent of total annual national emissions of 6 billion metric tons. Total global emissions are approximately 25 billion metric tons each year.

Based on the above analysis, greenhouse gas emissions from the current level of grazing in Powder River Canyon GU (under the No Action Alternative) and under the other alternatives would be negligible or even undetectable.

3.2 Vegetation and Riparian/Wetland Areas

3.2.1 Land Use Plan Management Objectives

The following vegetation objectives come from the Baker RMP (USDI 1989, pp 69-72):

- Manage upland grass-shrub vegetation to achieve a mid-seral stage plant community.
- Improve upland vegetation where needed to protect riparian values.
- Maintain and enhance crucial deer winter range.
- Maintain/enhance vegetation (canopy coverage, diversity-quality, quality) in riparian habitat for fisheries.
- Maintain and enhance wet meadows, seeps, etc.

3.2.2 Affected Environment

Upland vegetation in Powder River Canyon GU consists predominately of sagebrush communities with an understory of perennial grass species. The primarily sagebrush communities are mountain big sagebrush (*Artemisia tridentata vaseyana*) Wyoming big sagebrush (*Artemisia tridentata wyomingensis*), and rigid sagebrush (*Artemisia rigida*). The perennial grass species consists primarily of bluebunch wheatgrass (*Pseudoroegneria spicata*), Idaho fescue (*Festuca idahoensis*), Sandberg bluegrass (*Poa secunda*), Thurber's needlegrass (*Achnatherum thurberianum*), and squirrel tail (*Elymus elymoides*). There are also localized areas of cheatgrass (*Bromus tectorum*) and other non-native annuals. In addition, there are areas within Powder River Canyon GU that have been planted to crested wheatgrass (*Agropyron cristatum).*

Similar to the GU, upland vegetation in Salt Creek Allotment consists primarily of mountain big sagebrush, Wyoming big sagebrush, and rigid sagebrush. The understory of the mountain big sagebrush community primarily consists of the native grass species (e.g., bluebunch wheatgrass Idaho fescue, Sandberg bluegrass, Thurber's needlegrass, and squirreltail) while the understory in the Wyoming big sage and rigid sagebrush community is primarily comprised of non-native annual grass species (e.g., cheatgrass).

An ID team reviewed the rangeland health assessment conducted in 2007 and upland trend plots conducted in 1987 and 2007. During this review, the ID team determined that current livestock grazing in the Salt Creek Allotment is meeting rangeland health standards 1, 3, and 5.

Riparian vegetation varies from dense shrubs and trees including such species as willow (*Salix sp.),* aspen (*Populus tremuloides),* alder (*Alnus sp.),* and chokecherry (*Prunus virginiana*) along some stretches, to primarily grasses, sedges (*Carex sp.*), and rushes in other places.

According to BLM field survey worksheet completed between 2002 and 2003, there are 11.75 miles of riparian area within public lands in Powder River Canyon GU. Of these miles, only 0.50 miles were found not meeting rangeland health standards and were classified as being functioning at risk, trend not apparent. This section of riparian area is located in Whiskey Gulch Pasture of Salt Creek Allotment. The remaining 11.25 miles of riparian area are classified as

being at proper functioning condition (PFC) or functioning at risk, upward trend. Definitions for PFC are provided below.

The BLM (USDI 1998) uses PFC, which is the concept of physical function of riparian areas, as a minimal threshold for managing water quality, fish, and wildlife habitat, aesthetics, and livestock forage. It is a qualitative assessment that considers hydrology, vegetation, and soil/landform attributes and rates riparian function as one of the following:

- **Proper Functioning Condition**: Riparian-wetland areas are properly functioning when adequate vegetation, landform, or large woody debris is present to dissipate stream energy associated with high water flows, thereby reducing erosion and improving water quality, filter sediment, capture bedload, and aid in floodplain development; improve flood-water retention and ground-water recharge; develop root masses that stabilize streambanks against cutting action; develop diverse ponding and channel characteristics to provide the habitat and the water depth, duration, and temperature necessary for fish production, waterfowl breeding, and other uses; and support greater biodiversity.

- **Functional - At Risk**: Riparian-wetland areas that are in functional condition, but an existing soil, water, or vegetation attribute makes them susceptible to degradation. Stream reaches determined to be functional at risk are further assessed for Trend: upward, downward, or not apparent.

- **Non-Functioning**: Riparian-wetland areas that clearly are not providing adequate vegetation, landform, or large woody debris to dissipate stream energy associated with high flows, and thus are not reducing erosion, improving water quality, etc.

Proper functioning condition does not necessarily equate to potential natural community, advanced ecological status, or desired future condition. Rather, PFC demonstrates the level of resilience required for a system to function and allow for maintenance and recovery of desired values such as water quality and fish habitat. In some areas, streams that have a rating of PFC may be identified for restoration activities because of the relative low cost associated with a high probability of successfully achieving a potential natural community.

3.2.3 Direct and Indirect Effects

To determine rangeland health in Powder River Canyon GU, the BLM applied the standards for rangeland health found in the S&Gs (USDI 1997) to analyze both riparian and upland vegetation within Powder River Canyon GU. There are five rangeland health standards used to rate a grazing pasture (see Appendix 1). For the vegetation analysis, only three standards are discussed: Standard 1 (watershed function-uplands), Standard 2 (watershed function-riparian), and Standard 3 (ecological processes). Standard 4 (Water Quality) is discussed in Section 3.3 (Soil and Hydrological Resources and Riparian/Wetland Areas) and Standard 5 (Native, T&E, and species of local importance) are disused in Section 3.6 (Wildlife/Wildlife Habitat and Special Status Animals). Floodplains and wetlands are addressed in this section through the PFC ratings and attainment of Standard 2.

Alternative 1 (No Action)

Riparian Rangeland Health Standards

Based on the rangeland health assessments conducted in 2007, the BLM found that current livestock management in Whiskey Gulch Pasture does not result in meeting riparian vegetation management objectives identified in the Baker RMP (USDI 1989), which is to maintain and enhance wet meadows, seeps, etc. Specifically, PFC assessment documented that the main water source in Whiskey Gulch Pasture is not meeting minimum standards and that livestock grazing is a causal factor. The riparian area is approximately 0.50 miles long and waters 161 cows for 29 days during the spring or fall. This amount of livestock use has contributed to noxious and invasive plants to persist in the riparian area near the seep. In addition, there are numerous cattle trails traversing the steep drainage walls that have been increasing sedimentation into the small perennial stream. These adverse effects to riparian rangeland health would continue under the No Action alternative.

Upland Rangeland Health Standard

Livestock management under Alternative 1 is consistent with Brewer et al. (2007) recommendations, which have been shown to improve or maintain elements of upland rangeland health. In fact, allotments in the Powder River Canyon GU managed consistently with these recommendations meet all upland rangeland health standards. Upland rangeland health would continue to meet standards under the No Action Alternative.

Alternative 2

Riparian Rangeland Health Standard

Excluding livestock grazing from the 1,217 acres that comprise Salt Creek Allotment would prevent livestock from access to the 0.50 miles of riparian area. This restriction would allow for progress towards meeting riparian rangeland health standards for watershed function-riparian by allowing the growth of sufficient vegetation cover to protect streambanks during high flows. In fact, Alternative 2 riparian management would be more restrictive than Clary and Leininger (2000) recommendations, which have been shown to improve elements of rangeland health in similar streams. However, due to the small size of the area improved, overall beneficial impacts would be negligible on the watershed scale.

Upland Rangeland Health Standard

On the one hand, excluding livestock grazing within the entire Salt Creek Allotment under Alternative 2 is consistent with Brewer et al (2007) recommendations, which have been shown to improve and maintain elements of upland rangeland health. On the other hand, long-term livestock exclusion in the lower elevation Wyoming big and mountain big sagebrush stands that were converted to non-native annual grass stands would result in a build-up of fine fuels within the allotment, which can increase fire severities to a level that can convert adjacent intact native mountain big sagebrush communities into non-native annual grass communities. Therefore, there are two possible impacts to rangeland health under Alternative 2, which would be

dependent on fire severity and frequency. If wildfires do not occur during the period that livestock grazing is excluded, upland rangeland health would remain at a level that meets vegetation resource objectives identified in the current Baker RMP (USDI 1989). However, if frequent fires or a severe fire occurs within the native intact sagebrush stands, there would be an increase in invasive plants and noxious weeds, as supported by Bates et al. (2009), which would reduce upland rangeland health.

Alternative 3

Riparian Rangeland Health Standard

Since Whiskey Gulch is the only pasture that has a riparian area on public lands in Salt Creek Allotment, excluding livestock grazing from Whiskey Gulch Pasture would have the same beneficial impacts to riparian rangeland health as those described under Alternative 2. Authorizing livestock grazing in the Middle and South pastures under Alternative 3 would not have an effect on riparian rangeland health standards.

Upland Rangeland Health Standard

Since livestock grazing management would continue at current levels in the Middle and South pastures, impacts to upland rangeland health in these pastures would be the same as described under the No Action Alternative. Impacts due to removing livestock grazing on 866 acres (i.e., Whiskey Gulch Pasture) would be the same as described under Alternative 2, although such impacts would be less extensive as they would be limited to 866 acres (compared to 1,217 acres under Alternative 2).

Alternative 4

Riparian Rangeland Health Standard

Fencing the unnamed stream that is currently not meeting riparian rangeland health standards would prevent livestock from entering the riparian zone, thus eliminating ongoing adverse effects and resulting in beneficial impacts that would be the same as identified under Alternatives 2 and 3.

Upland Rangeland Health Standard

Impacts to upland rangeland health would be the same as described under Alternative 1.

3.2.4 Cumulative Impacts

The geographic scope of the cumulative impacts on vegetation is confined to Salt Creek Allotment. Land management in the remaining six allotments within Powder River Canyon GU is meeting all rangeland health standards and no future projects on either public or private lands have been identified within these allotments.

Past and present actions

Riparian Rangeland Health Standards

Past and present livestock management in Salt Creek Allotment has resulted in 0.50 miles of riparian area in Whiskey Gulch Pasture not meeting riparian rangeland health standards. No other activities either on public or private lands has contributed to the degradation of the riparian area.

Upland Rangeland Health Standards

Past actions within Salt Creek Allotment that have had the greatest impact on upland rangeland health include those relating to livestock grazing, wildfire, and road construction, which have converted lower elevation Wyoming big sagebrush and mountain big sagebrush to a non-native annual grass-dominated community. This conversion covers approximately 100 acres of public lands in Salt Creek Allotment and an indeterminate number of acres of private lands located in South and Middle pastures.

Present actions within Salt Creek Allotment affecting vegetation are limited to livestock grazing. Present livestock management is consistent with Brewer et al. (2007) recommendations, which have been shown to maintain upland rangeland health at a level consistent with meeting vegetation resource objectives identified in the current Baker RMP (USDI 1989). As a result, no increase in acres dominated by non-native annual grass is occurring.

Reasonably Foreseeable Actions

Other than continued livestock grazing, there are no proposed projects within the public land portion of Salt Creek Allotment, and no projects are expected in the private land portion of the allotment that would affect vegetation on public lands. Consequently, there would be no additional incremental effects to vegetation resources due to reasonably foreseeable actions. The cumulative discussion below is thus limited to impacts from past and present management actions combined with alternative-specific direct and indirect effects previously discussed.

Cumulative Effects by Alternative

Alternative 1

<u>Riparian Rangeland Health Standard</u>
Ongoing livestock management has resulted in 0.50 miles of riparian area not meeting rangeland health standards. Continuing current livestock management would result in no improvements in the 0.50 miles of riparian area and could result in further degradation of the riparian area.

<u>Upland Rangeland Health Standard</u>
Although past management actions have resulted in approximately 100 acres of native sagebrush to be converted to non-native annual grass, continuing livestock grazing under current levels and management would maintain high plant vigor and reduce fine fuel loads, both of which are needed to control the spread of non-native annual grass. As a result, the cumulative impacts of

past, present, and future grazing under Alternative 1 would include preventing further spread of non-native annual grasses and maintaining upland rangeland health standards.

Alternative 2

Riparian Rangeland Health Standard
Ongoing livestock management has resulted in 0.50 miles of riparian area not meeting rangeland health standards. Livestock management under Alternative 2 would be more restrictive than Clary and Leininger (2000) recommendations, which have been shown to improve elements of riparian rangeland health. Therefore, excluding livestock grazing would improve 0.50 miles of riparian area and make significant progress towards meeting riparian rangeland health standards.

Upland Rangeland Health Standard
Although livestock management under Alternative 2 would be consistent with maintaining high plant vigor, it would also increase fine fuel loads on 1,217 acres. Elevated fine fuels would increase the chance of having a high severity fire, which has been documented to facilitate the spread of non-native annual grasses. As a result, there would be two possible cumulative effects under Alternative 2, depending on fire frequency and severity. If fire frequency and severity were low, the cumulative effects of Alternative 2 would be no increase in the acreage currently dominated by non-native annual grasses. If fire frequency or severity increases, the acreage of non-native annual grass would increase from current levels, adversely affecting upland rangeland health.

Alternative 3

Riparian Rangeland Health Standard
Cumulative impacts would be the same as those described under Alternative 2.

Upland Rangeland Health Standard
Cumulative impacts to the Middle and South Pastures would be the same as those described under the No Action Alternative. Impacts to upland rangeland health standards in Whiskey Gulch Allotment would be the same as those described under Alternative 2 for Salt Creek Allotment, although they would be limited to 866 acres.

Alternative 4

Riparian Rangeland Health Standard
Cumulative impacts would be the same as those as described under Alternative 2.

Upland Rangeland Health Standard
Cumulative impacts would be the same those as described under Alternative 1.

3.3 Soil and Hydrologic Resources

3.3.1 Land Use Plan Management Objectives

The current Baker RMP (USDI 1989) does not contain resource objectives for soil or hydrology. However, 43 CFR 4180.1 directs the BLM to make significant progress towards meeting rangeland health, of which soil and hydrology are elements.

3.3.2 Affected Environment

Soils

The following soils information is from the Baker County Soil Survey (Natural Resources Conservation Service [NRCS] 1997). Powder River Canyon GU is comprised of 21 different soil types. There are four main soil units within the GU and they are described below.

The first major soil unit within the GU is 142C-Ruckles-Ruclick complex. This soil is located on hills with slopes ranging from 2 to 12 percent, at elevations that range from 2,000 to 3,800 feet, with an annual precipitation is 9 to 12 inches. Within this complex, Ruckles soils are shallow and well drained, with slow permeability and an available water capacity of 1 to 2 inches. Runoff is slow or medium, and the hazard of water erosion is slight or moderate. The potential plant community is dominated by Idaho fescue and Wyoming big sagebrush, with Idaho fescue being the major forage-producing plant. If the site is in excellent condition, the total annual production is estimated at 1,200 pounds per acre in favorable years and 300 pounds per acre in unfavorable years. Areas with Ruckles soil are used mainly for livestock grazing, although livestock access is limited by the very stony surface layer. Such areas also provide habitat for many kinds of wildlife.

Ruclick soil is moderately deep and well drained, with moderate permeability to a depth of about 12 inches and slow below that depth. Available water capacity is 2 to 5 inches. Runoff is rapid, and the hazard of water erosion is high. The potential plant community is dominated by Idaho fescue and Wyoming big sagebrush. Bluebunch wheatgrass is the major forage-producing plant. If the site is in excellent condition, the total annual production is estimated at 1,500 pounds per acre in favorable years and 500 pounds per acre in unfavorable years. Livestock access is limited by the very cobbly surface layer.

If the condition of the 142C-Ruckles-Ruclick complex site deteriorates through overgrazing, Idaho fescue loses vigor and decreases in extent. Bluebunch wheatgrass, Sandberg bluegrass, and Wyoming big sagebrush increase in extent. If deterioration continues, the extent of bluebunch wheatgrass decreases and cheatgrass and other non-native annual grasses invade the site. Mechanical treatment for brush control and range seeding is not practical in these sites because of the very cobbly or stony surface layer.

The second major soil unit within Powder River Canyon GU is the 143E-Ruckles-Ruclick complex, which occurs on 35 to 50 percent south slopes at elevations that range from 2,000 to 3,800 feet with an annual precipitation of 9 to 12 inches. The native vegetation is mainly bunchgrasses and shrubs. The physical characteristics of Ruckles soil in the 143E-Ruckles-

Ruclick complex is similar to that in the 142C-Ruckles-Ruclick complex, except that, due to steeper slopes in the 143E-Ruckles-Ruclick complex, runoff is rapid, and the hazard of water erosion is high. The physical characteristics of Ruclick soils are the same in both complexes.

The potential plant community on the Ruckles soil is dominated by bluebunch wheatgrass and Wyoming big sagebrush, with bluebunch wheatgrass being the major forage-producing plant. If the site is in excellent condition, the total annual production is estimated at 800 pounds per acre in favorable years and 300 pounds per acre in unfavorable years. Areas with Ruckles soil are used mainly for livestock grazing, although livestock access is limited by the slope and the very stony surface layer. Such areas also provide habitat for many kinds of wildlife.

The potential plant community on the Ruclick soil is dominated by bluebunch wheatgrass and Wyoming big sagebrush, with bluebunch wheatgrass being the major forage-producing plant. If the site is in excellent condition, the total annual production is estimated at 1,200 pounds per acre in favorable years and 400 pounds per acre in unfavorable years. Livestock access is limited by the slope and the very cobbly surface layer.

If the condition of 143E-Ruckles-Ruclick complex sites deteriorates through overgrazing, bluebunch wheatgrass loses vigor and decreases in extent: Sandberg bluegrass and lomatium increase in extent. If deterioration continues, cheatgrass and other non-native annual grasses invade the site. Mechanical treatment for brush control and range seeding is not practical because of the slope and the very cobbly or stony surface layer.

The third major soil unit within Powder River Canyon GU is the 143D-Ruckles-Ruclick complex, which occurs on 12 to 35 percent south slopes. Other characteristics such as elevation, native vegetation, and precipitation are the same as for the 143E-Ruckles-Ruclick complex.

The Ruckles soil is shallow and well drained with slow permeability and an available water capacity of 1 to 2 inches. Runoff is medium, and the hazard of water erosion is moderate or high. The potential plant community is dominated by bluebunch wheatgrass and Wyoming big sagebrush, with bluebunch wheatgrass being the major forage-producing plant. If the site is in excellent condition, the total annual production is estimated at 800 pounds per acre in favorable years and 300 pounds per acre in unfavorable years.

The Ruclick soil is moderately deep and well drained. Permeability is moderate to a depth of about 12 inches and slow below that depth, with an available water capacity of 2 to 5 inches. Runoff is medium, and the hazard of water erosion is moderate or high. Areas with Ruckles soil are used mainly for livestock grazing. Such areas also provide habitat for many kinds of wildlife. The potential plant community is dominated by bluebunch wheatgrass and Wyoming big sagebrush. Bluebunch wheatgrass is the major forage-producing plant. If the site is in excellent condition, the total annual production is estimated at 1,200 pounds per acre in favorable years and 400 pounds per acre in unfavorable years. Livestock access is limited by the very cobbly surface layer.

If the condition of the 143D-Ruckles-Ruclick complex sites deteriorates through overgrazing, bluebunch wheatgrass loses vigor and decreases in extent while Sandberg bluegrass, lomatium,

and Wyoming big sagebrush increase in extent. If deterioration continues, cheatgrass and other non-native annual grasses invade the site. Mechanical treatment for brush control and range seeding is not practical because of the very cobbly or stony surface layer.

The fourth major soil unit within the GU is the 136F-Rock outcrop-Ruclick complex, which occurs on 50 to 70 percent north slopes. Other characteristics such as elevation, native vegetation, and precipitation are the same as for the 143E-Ruckles-Ruclick and 143D-Ruckles-Ruchlick complex.

The Ruclick soil is moderately deep and well drained. Permeability is moderate to a depth of about 12 inches and slow below that depth, with available water capacity of 2 to 5 inches. Runoff is rapid, and the hazard of water erosion is very high. The potential plant community is dominated by Idaho fescue, bluebunch wheatgrass, and Wyoming big sagebrush. Idaho fescue and bluebunch wheatgrass are the major forage-producing plants. If the site is in excellent condition, the total annual production is estimated at 1,700 pounds per acre in favorable years and 600 pounds per acre in unfavorable years. Although this unit is used mainly for livestock grazing, livestock access is limited by the slope, the rock outcrop, and the cobbles on the surface. The area also provides habitat for many kinds of wildlife.

If the condition of 136F-Rock outcrop-Ruclick complex sites deteriorates through overgrazing, Idaho fescue and bluebunch wheatgrass lose vigor and decrease in extent. Big sagebrush and Sandberg bluegrass increase in extent. If deterioration continues, cheatgrass and other non-native annual grasses invade the site. Mechanical treatment for brush control and range seeding is not practical because of the slope, the cobbly surface layer, and the Rock outcrop.

Hydrology

Waters in Oregon that do not attain State standards are considered "water quality limited" and are included on Oregon's 303(d) List of Water Quality Limited Water bodies (e.g., 303(d) list). The most current 303(d) list for Oregon, which was approved by the EPA, is the 2004/06 list (Oregon Department of Environmental Quality 2006). Within Powder River Canyon GU, the Powder River and Salt Creek are listed on the 303(d) list for flow modification for resident fish and aquatic life, salmonid fish rearing, and salmonid fish spawning; habitat modification for resident fish and aquatic life, salmonid fish rearing, and salmonid fish spawning; and temperature (Summer) for salmonid fish rearing. Salt Creek and an un-named tributary of Powder River are the only two waterways that occur in Salt Creek Allotment. The confluence of Salt Creek and Powder River is outside the allotment, while the confluence of the unnamed tributary and Powder River is within the boundary the allotment. The BLM administers less than 0.25 miles of Salt Creek within Middle and South pastures and the entire 0.55 miles of the unnamed tributary in Whiskey Gulch Pasture, including the mouth of the unnamed tributary at Powder River.

No data was collected for Standard 4 (water quality) for Salt Creek or the unnamed creek within Salt Creek Allotment because Salt Creek flows less than 0.25 mile across public lands and the unnamed tributary has a low water flow volume not sufficient to obtain accurate water quality measurements.

For streams listed on the 303(d) list, states must calculate total maximum daily loads (TMDLs) for water quality impaired streams. The State of Oregon has not yet started to calculate TMDLs for the Powder River Subbasin. When the State initiates the TMDL process, the BLM will be involved with the development and implementation of the TMDL as outlined in the U.S. Forest Service (USFS) and BLM Protocol for Addressing Clean Water Act Section 303(d) Listed Waters (USFS et al. 1999).

The 0.50-mile unnamed tributary of the Powder River contains the only riparian area within Salt Creek Allotment that meets the requirements for conducting a PFC assessment. It is also the only water source for 161 cow/calf pairs in Whiskey Gulch Pasture for 29 days. The PFC assessment found excessive bank trampling, bank erosion, and headcutting of the stream channel due to the high amount of livestock use within the 0.50-mile reach.

3.3.3 Direct and Indirect Effects

Alternative 1

Soils

The moderate to highly erosive soils in Salt Creek Allotment consists of native vegetation, which reduces the probability of soil instability in upland areas. In addition, grazing would continue to be authorized under the No Action Alternative when non-native annual grass is palatable to livestock (e.g., when non-native annual grass is green) or in the fall when the native perennial grass species are dormant. This type of grazing system is consistent with maintaining or improving Rangeland Health Standards 1 and 3, which takes into consideration soil stability. Therefore, the livestock management under Alternative 1 would maintain a level of soil stability in upland areas consistent with meeting rangeland health standards. Continued livestock access to the unnamed tributary in Whiskey Gulch would continue to cause bank erosion and headcutting due to trampling by livestock, thus adversely affecting soils in the riparian area and slopes leading to the riparian area. The area of soil disturbance would be isolated to the upland adjacent to the stream reach not meeting riparian rangeland health standards.

Hydrology

Continued livestock management under Alternative 1 would continue to thwart 0.50 miles of riparian area from meeting Rangeland Health Standard 2. Localized impacts would thus be adverse and minor. On the broad-scale, adverse impacts to the 303(d) listing factors for the Powder River waters, which are flow modification, habitat modification, and summer temperature, would be negligible.

Alternative 2

Soils

Excluding all livestock grazing within Salt Creek Allotment under Alternative 2 could have two potential impacts to soils, which would be dependent on fire frequency and fire severity. The lower elevations and low slope areas in Salt Creek Allotment has been converted to non-native

annual grass. Excluding livestock grazing would result in a higher amount of residual grass material, which would increase the risk of a high severity fire above that of Alternative 1. If a high severity fire were to occur, native stands of intact sagebrush within Salt Creek Allotment have a high probability of converting to a non-native annual grass vegetation community, which would have an adverse effect on soil stability. On the other hand, if no fires or low severity fires occur, then there would be no change to a slight improvement to soil stability when compared with Alternative 1.

The soils adjacent to the stream reach that is not meeting rangeland health standards would improve under Alternative 2. However, the area of soil improvement would be small and limited to roughly 2 to 3 acres therefore beneficial effects would be negligible.

Hydrology

Excluding livestock grazing would improve 0.50 miles of riparian area in Salt Creek Allotment when compared to Alternative 1. While such improvements would have beneficial impacts to the hydrology of the unnamed tributary, due to the small length of tributary that would be improved, overall beneficial impacts to flow, improved riparian habitat, and localized reductions in summer water temperatures would be negligible.

Alternative 3

Soils

Excluding grazing within Whiskey Gulch Pasture of Salt Creek Allotment under Alternative 3 would have same impacts to soils as those described under Alternative 1 for the Middle and South Pastures and the same as Alternative 2 for Whiskey Gulch Pasture.

Hydrology

Impacts to hydrology relating to improvements in the unnamed tributary in Whiskey Gulch Pasture would be the same as those described under Alternative 2.

Alternative 4

Soils

Impacts to soils would be the same as those described under Alternative 1, with exception of soils adjacent to the stream reach that is not meeting rangeland health standards, which would improve behind the riparian exclosure. However, the area of soil improvement would be small and limited to roughly 2 to 3 acres therefore beneficial effects would be negligible.

Hydrology

Fencing the unnamed creek in the Whiskey Gulch Pasture would have the same impacts to hydrology in the riparian area described under Alternatives 2 and 3, and would thus help make significant improvement towards meeting riparian rangeland health standards. While such

improvements would have beneficial impacts to the hydrology of the unnamed tributary, due to the small length of tributary that would be improved, overall beneficial impacts to flow, improved riparian habitat, and localized reductions in summer water temperatures would be negligible.

3.3.4 Cumulative Impacts

This cumulative impacts analysis is limited to changes in soils and hydrology in Salt Creek Allotment.

Past and Present Actions

Soils

Past actions within Salt Creek Allotment that may have had an effect on soil include wildfire, livestock grazing, and road construction. The impact of these actions has resulted in approximately 100 acres of native sagebrush community to convert to non-native annual grass. Present livestock management is consistent with Brewer et al. (2007) recommendations, which have been shown to maintain rangeland health at a level consistent with meeting soil resource objectives identified in the current Baker RMP (USDI 1989). Since present livestock management is consistent with Brewer et al. (2007) recommendations, no increase in acres dominated by non-native annual grass is occurring, which suggests that soils continue to be stable.

Hydrology

Past and present actions within Salt Creek Allotment that may have an effect on hydrology are limited to livestock grazing that have resulted 0.50 miles not meeting riparian health standards.

Reasonably Foreseeable Actions

There are no proposed projects within the public or private lands within the Powder River Canyon GU that would affect soil and hydrology. As a result, the cumulative effects discussion is limited to past and present management actions and alternative-specific direct and indirect effects.

Cumulative Effects by Alternative

Alternative 1

<u>Soils</u>
Past and present management actions (including livestock grazing) have resulted in meeting upland rangeland health standards, which includes soil stability. Since livestock management would not change, soil stability would not change from current levels.

<u>Hydrology</u>
Continued livestock management under Alternative 1 would result in 0.50 miles of riparian area continuing to not meeting Rangeland Health Standard 2. Due to the limited amount of riparian

area not meeting standards, adverse impacts to the 303(d) listing factors for Powder River waters, which are flow modification, habitat modification, and summer temperature, would be negligible.

Alternative 2

Soils
Past management actions have resulted in approximately 100 acres of native sagebrush to be converted to non-native annual grass. Livestock management under Alternative 2 is consistent with maintaining high plant vigor. However, Alternative 2 would increase fine fuel loads on 1,217 acres. Elevated fine fuels increase the chance of having a high severity fire that has been documented to facilitate the spread of non-native annual grasses, which would increase the risk of soil erosion. Therefore, Alternative 2 has two possible cumulative effects, which are dependent on fire frequency and severity. If fire frequency and severity were low, the cumulative effects of Alternative 2 would not result in an increase in the acreage currently dominated by non-native annual grasses. However, if fire frequency or severity increases, the acreage of non-native annual grass would likely increase from current levels and adversely impact soil stability.

Hydrology
Excluding livestock grazing would improve 0.50 miles of riparian area in Salt Creek Allotment when compared to Alternative 1 by excluding livestock grazing on all public lands within the allotment. Beneficial impacts from excluding livestock grazing to flow, improved riparian habitat, and localized reductions in summer water temperatures would be negligible due to the small length of riparian area not meeting rangeland health.

Alternative 3

Soils
Impacts would be the same as under Alternative 1 for South and Middle Pastures and the same as under Alternative 2 on Whiskey Gulch Pasture.

Hydrology
Impacts would be the same as described under Alternative 2.

Alternative 4

Soils
Under Alternative 4, active livestock AUMs and season of use would be the same as under Alternative 1. This management is consistent with maintaining high native plant vigor, which would maintain the high-level soil stability identified in the rangeland health assessment.

Hydrology
Impacts would be the same as described under Alternative 2.

3.4 Noxious Weeds

3.4.1 Land Use Plan Management Objectives

There are no specific noxious weed objectives for Powder River Canyon GU other than as they relate to upland, forestland, and riparian vegetation resource condition objectives. Management guidance for noxious weed control in the entire resource area is located on page 50 of the current Baker RMP (USDI 1989), which states:

> Control methods will be proposed and subject to site-specific environmental analyses consistent with the Record of Decision on BLM's Northwest Area Noxious Weed Control Program EIS and EIS Supplement. Control methods will not be considered unless the weeds are confined to public lands or control efforts are coordinated with owners of adjoining infested non-public lands. Proper grazing management will be emphasized after control to minimize possible re-infestation. Coordination and cooperation with county weed control officers will continue on a regular basis.

3.4.2 Affected Environment

Infestations of noxious weeds are known to occur in the Salt Creek Allotment (refer to Figures 2 and 3 on pages 50 and 52 in the Baker RMP [USDI 1989]). The most common noxious weeds are whitetop (*Lepidium draba*), Scotch thistle (*Onopordum acanthium*), medusahead rye (*Taeniatherum caput-medusae*), and jointed goatgrass (*Aegilops cylindrica*). Medusahead rye and jointed goatgrass, both non-native annual grasses, are primarily found along roads in the Salt Creek Allotment. Whitetop, a perennial mustard species, is found primarily along the road in Whiskey Gulch Pasture. Due to the existing court injunction, the herbicides known to be most successful in controlling non-native annual grasses and perennial mustards in mixed plant communities cannot be used on BLM lands in Oregon until site specific NEPA is completed. At this time, only new infestations that are small and isolated are being treated with approved herbicides in an attempt to slow the spread of the weeds by reducing seed production. Small, scattered sites of Scotch thistle, a common biennial, are located within the Salt Creek Allotment on disturbed sites such as livestock loafing areas and in draw bottoms near watering areas, such as the unnamed tributary in the Whiskey Gulch Pasture. Treatment has not been consistent except immediately along primary road systems.

Current treatment methods include hand pulling on small sites when appropriate, and spot treatments in the spring and fall with herbicides. A district-wide EA for vegetation treatments using herbicides is being prepared to tier to the 2010 Vegetation Treatments Using Herbicides on BLM Lands in Oregon FEIS (USDI 2010). Until the District EA is final or site-specific analysis is conducted for individual projects, herbicide use will remain under the restrictions of a 1987 court injunction and the guidance set forth in the Northwest Area Noxious Weed Control Program EIS (USDI 1985) and Supplement (USDI 1987). The court injunction limited herbicide use to four active ingredients (Glyphosate, Dicamba, Picloram, and 2, 4-D) and restricts the use of these active ingredients to treating only legally designated federal, state, and county noxious weeds.

The upland areas of the Salt Creek Allotment are currently meeting upland rangeland health standards. This suggests that current levels of livestock grazing in upland areas of the Allotment is maintaining high native upland plant vigor necessary to reduce the spread of noxious and invasive plant species (Sheley and Petroff 1999). However, the amount of livestock use in the riparian area along the unnamed tributary in Whiskey Gulch Pasture is not consistent with controlling the spread of noxious and invasive weeds (Sheley and Petroff 1999; Clary and Leininger 2000). As a result, weeds have become established in the riparian area near the spring source and the area does not meet riparian rangeland health standards.

3.4.3 Direct and Indirect Effects

Alternative 1

Livestock management under Alternative 1 is consistent with meeting upland rangeland health standards, which suggests that noxious or invasive weeds would not increase in upland areas of the Salt Creek Allotment under this alternative. On the other hand, livestock management under Alternative 1 is not consistent with meeting riparian rangeland health standards, which would allow for the continued spread of noxious and invasive weeds within the riparian area along the unnamed tributary in Whiskey Gulch Pasture. Direct and indirect effects are expected to be long-term with beneficial and negligible impacts in the uplands and minor and adverse impacts in the riparian.

Alternative 2

The impacts on noxious and invasive weeds from not permitting livestock grazing in Salt Creek Allotment under Alternative 2 would be dependent on fire severity and frequency. The elimination of livestock grazing on 1,217 acres would result in the buildup of fuels, which has the potential to increase fire severities or frequencies to a level that can convert adjacent intact native mountain big sagebrush communities to non-native grass or noxious weed communities. The severity of adverse effects would be dependent on the acreage converted. On the other hand, if fire severity and frequency were low, there would be beneficial impacts on the management of noxious weeds in the riparian area within Salt Creek Allotment. In such instances where fire frequency and severity were low, livestock management would be consistent with maintaining high plant vigor in both the upland and riparian areas, which is identified as one factor needed to control the spread and establishment of noxious and invasive weeds (Sheley and Petroff 1999). Furthermore, excluding livestock use in the riparian area along the unnamed tributary, which is more restrictive than the recommendations of Clary and Leininger (2000), would increase the success of noxious and invasive weed treatments in that riparian area and decrease the spread of such weeds. Direct and indirect effects would be long-term, adverse or beneficial, and minor to moderate depending on fire severity and frequency.

Alternative 3

Since livestock grazing management would continue at current levels in the Middle and South pastures of Salt Creek Allotment, impacts to the management of noxious and invasive weeds in these pastures would be the same as described under Alternative 1. Fire severity and frequency impacts due to removing livestock grazing on 866 acres in Whiskey Gulch Pasture would be the

same as described under Alternative 2, although such impacts would be less extensive as they would be limited to 866 acres (compared to 1,217 acres under Alternative 2). Direct and indirect effects, related to fire severity and frequency, are the same as described in Alternative 2.

Alternative 4

Impacts from the treatment of noxious and invasive weeds in upland areas of Salt Creek Allotment would be the same as those identified under Alternative 1. Impacts to the riparian area along the unnamed tributary in Whiskey Gulch Pasture would be the same as identified in Alternative 3, without the threat of increased fire severity and frequency. As a result, Alternative 4 would provide for the greatest long-term, site specific, beneficial impacts in the management of noxious and invasive weeds in Salt Creek Allotment. The magnitude of these impacts would be moderate.

3.4.4 Cumulative Impacts

The cumulative impact analysis for noxious weeds is confined to Salt Creek Allotment.

Past and Present Actions

Past and present land management actions that have impacted the spread and establishment of noxious and invasive weeds in Salt Creek Allotment are livestock grazing, ground disturbing activities (e.g., road construction, mining, and higher intensity wildfire), and herbicide treatments. In general, livestock management and ground disturbing actions have resulted in adverse effects to vegetation, whereas herbicide control treatments have resulted in beneficial effects to weed control. Livestock grazing and ground disturbing activities have resulted in approximately 100 acres of lower elevation Wyoming big sagebrush and mountain big sagebrush communities converting into non-native annual grass-dominated communities. Although changes in livestock grazing and reductions in ground disturbing activities may curtail further spread of noxious and invasive species and conversion into non-native communities, such changes would not improve or convert affected sites back to desirable native species and rangeland health condition (Mosen and Kitchen 1994).

Similar to public lands, resource conditions on private lands have been largely affected by past livestock management and ground disturbing projects. Since private landowners are not required to monitor or assess private lands, it is difficult to determine the extent of impact these land management decisions have had on noxious weed establishment and spread. However, based on professional BLM range staff observations, private land livestock management seems to be consistent with Brewer et al. (2007), which would make rangeland heath on private land relatively similar to that on public lands.

Reasonable Foreseeable Actions

There are no proposed projects within the public land portion of Salt Creek Allotment. However excluding livestock grazing on public lands within Salt Creek Allotment, Alternative 2, may cause the livestock permittee to increase the stocking rate on the private lands within Salt Creek

Allotment to offset the losses on public lands. This would increase the extent of non-native annual grass and noxious weeds on private lands, including sections that include Salt Creek.

Cumulative Effects by Alternative

Alternative 1

Under Alternative 1, cumulative impacts are expected to be adverse and negligible to minor. Livestock management would be consistent with reducing the risk of noxious weed and invasive plant establishment and spread. This includes an integrative approach that takes into consideration chemical, manual, mechanical and biological treatments of established weed sites thus reducing seed dispersal, and maintaining high plant vigor in native plant communities (Sheley and Petroff 1999). Under Alternative 1, plant vigor in the upland portions of the allotment would be high enough where the risk of noxious weed and invasive plant establishment and spread would remain low. The condition of 0.50 miles along the riparian area of the unnamed tributary in Whiskey Gulch Pasture, however, would not improve and could possibly experience further degradation under Alternative 1, which would allow for the continued spread of noxious and invasive weeds within this localized area.

Alternative 2

Cumulative impacts under Alternative 2 would be dependent on fire severity, frequency or if the livestock permit holder chooses to increase stocking rate on private lands within the Salt Creek Allotment. If the buildup of fuel due to removing livestock grazing from public lands within the Salt Creek Allotment increases fire severity or frequency to a level that can convert adjacent intact native mountain big sagebrush communities to non-native grass or noxious weed communities, then impacts to the management of noxious weeds and invasive plants would be adverse. The intensity of such impacts would be dependent on the acreage converted. If fire severity and frequency remains low and the livestock operator chooses to maintain the current stocking rate on private lands within the Salt Creek Allotment, native plant communities would continue to maintain high plant vigor. This coupled with treatments of established weed sites would have beneficial impacts on the control of noxious and invasive weeds in both upland and riparian areas. Removal of livestock grazing in the 0.50 mile stretch of riparian area along the unnamed tributary would push that area to meet riparian rangeland health standards by increasing and maintaining high plant vigor, which is identified as an important factor needed to control the spread and establishment of noxious and invasive weeds (Shelley and Petroff, 1999).

Alternative 3

Cumulative impacts to weed management on Middle and South pastures of Salt Creek Allotment would be the same as described under Alternative 1. Impacts in Whiskey Gulch Pasture would be similar to those identified under Alternative 2, although the potential for increased fire severity and frequency would be limited to the one pasture instead of the entire allotment. Impacts to the 0.50 mile section of riparian area along the unnamed tributary would also the same as identified under Alternative 2.

Alternative 4

Cumulative impacts to upland areas of Salt Creek Allotment would be the same as identified under Alternative 1. Impacts to the 0.50-mile section of riparian area along the unnamed tributary in Whiskey Gulch Pasture would be the same as identified under Alternative 2.

3.5 Fish and Aquatic Habitat

3.5.1 Land Use Plan Management Objectives

The following fish and aquatic management direction, implementation decisions, and resource objectives come from the Baker RMP (USDI 1989, p. 18):

Management Direction

- Maintain or enhance important anadromous and resident fisheries.
- Increase habitat productivity.
- Emphasize coordinated management with other agencies and landowners.
- Restore, maintain, or enhance fish habitat on 155 miles of stream that have anadromous and resident fish or the potential to support fish.

Implementation

- Complete inventory of fishery habitat conditions.
- Improve fish habitat through a combination of projects and livestock grazing management, including adjustments to grazing seasons or systems to protect banks, vegetation, and to reduce soil erosion.

Powder River Canyon GU Resource Objectives

- Maintain/enhance vegetation (canopy coverage, diversity-quantity, quality) in riparian habitat for fisheries.

3.5.2 Affected Environment

Potential rearing habitat for red-band trout occurs at the confluence of the unnamed tributary and Powder River, which is located in Whiskey Gulch Pasture. This fish species is listed as a sensitive species by both the BLM and Oregon Department of Fish and Wildlife (ODFW). The affected environment for red-band trout is limited to a pool at the confluence of the unnamed tributary and Powder River. The water flow level of the remainder of the unnamed tributary is insufficient to support red-band trout habitat and will not be further analyzed in the fisheries section of this document.

A 0.50-mile section of the unnamed tributary is not meeting Rangeland Health Standards 2 and 4, which is due to insufficient riparian vegetation to stabilize the stream banks which is causing active headcuts. These headcuts and multiple cattle trails along the steep stream valley are

increasing fine sediment to enter the unnamed tributary and flow into the pool at its confluence of Powder River, where red-band trout habitat occurs.

3.5.3 Direct and Indirect Impacts

Alternative 1

Livestock management under Alternative 1 would continue to impede the riparian area in Whiskey Gulch Pasture to meet Rangeland health Standards 2 and 4. This would result in further adverse impacts to red-band trout rearing habitat located in the isolated pool at the confluence of the unnamed tributary and Powder River. However, adverse impacts would be negligible to minor due to the limited amount of habitat affected.

Alternative 2

Excluding grazing on public lands within Salt Creek Allotment would move the allotment to meeting Rangeland Health Standards 2 and 4, which would result in a reduction of fine sediment entering into the red-band trout-rearing habitat at the confluence of the unnamed tributary and Powder River. While impacts to red-band trout habitat would be beneficial, overall impacts would be negligible to minor due to the small size of the rearing habitat affected.

Alternative 3

Excluding livestock grazing within Whiskey Gulch Pasture would have the same impacts as those identified under Alternative 2.

Alternative 4

Fencing the unnamed tributary in Whiskey Gulch and preventing cattle from grazing within the riparian area and adjacent uplands would have the same impact as identified under Alternatives 2 and 3.

3.5.4 Cumulative Impacts

This cumulative impacts analysis is limited to impacts to fish and aquatic habitat in Salt Creek Allotment.

Past Actions

The largest past land management action that has impacted fisheries resources are wildfire and livestock grazing. Specifically, a wildfire removed the large diameter woody riparian vegetation along the unnamed tributary. It is not known when the fire occurred as it was not recorded, but based on site-visit observations, sufficient time has passed since the fire for the recruitment of small-diameter woody vegetation, which has aided in reducing water temperatures and reducing sedimentation when compared to conditions immediately after the fire.

Past livestock grazing has resulted in the lower elevation Wyoming big sagebrush and mountain big sagebrush to being converted to a non-native annual grass dominated community in the

upland areas of the Salt Creek Allotment. In addition, past livestock management has also contributed to stream bank instability along the unnamed tributary. The conversion to non-native annual grass community and the reduction in stream bank stability has increased the sedimentation levels of the unnamed tributary in Whiskey Gulch Pasture and reduced the rearing habitat quality for red-band trout. These adverse effects have been negligible to minor and confined to the confluence of the unnamed tributary and Powder River.

Present Actions

Present actions within Salt Creek Allotment that may have an effect on fisheries resource are limited to livestock grazing. Present livestock management has led to the unnamed tributary not meeting Rangeland Health Standards 2 and 4. Due to the size of the un-named tributary, the adverse effects to fisheries resources are negligible to minor and confined to the confluence of the unnamed tributary and Powder River.

Reasonable Foreseeable Future Actions

There are no proposed projects in the Powder River Canyon GU that would affect fisheries. As a result, the cumulative effects discussion will be limited to past and present management actions and alternative-specific direct and indirect effects.

3.5.5 Cumulative Effects by Alternative

Alternative 1

Continuing current management under Alternative 1 would continue to impede meeting Rangeland Health Standards 2 and 4. This would further reduce the quality of potential red-band trout rearing habitat located at the pool at the confluence of the unnamed tributary and Powder River. Overall impacts would be negligible to minor due to the limited amount of habitat affected.

Alternative 2

Excluding grazing on public lands within Salt Creek Allotment would improve riparian health and move Whiskey Gulch Pasture towards meeting Rangeland Health Standards 2 and 4. This would lead to a reduction of fine sediment entering red-band trout rearing habitat at the confluence of the unnamed tributary and Powder River. Impacts would be beneficial but negligible to minor due to the small size of the affected rearing habitat.

Excluding livestock grazing on public lands within Salt Creek Allotment may cause the livestock permittee to increase the stocking rate on the private lands within Salt Creek Allotment to offset the losses on public lands. This would increase the extent of non-native annual grass and noxious weeds on private lands, including sections that include Salt Creek, which may increase sedimentation levels in the Salt Creek. If this occurs, impacts to red-band trout habitat would be adverse and range from negligible to minor.

Alternative 3

Impacts to fisheries resources from excluding grazing in Whiskey Gulch Pasture would be the same as described under Alternative 2, with the exception that potential impacts from increased grazing on private lands within Salt Creek Allotment would be greatly reduced. As a result, the possibility of increased sedimentation levels in Salt Creek would be negligible.

Alternative 4

Excluding livestock grazing from the unnamed tributary would have the same beneficial impacts to fisheries resources as described under Alternative 2, without the potential for adverse impacts to red-band trout habitat associated with Salt Creek due to increased grazing on private lands.

3.6 Wildlife/Wildlife Habitat and Special Status Wildlife Species

3.6.1 Land Use Plan Management Objectives

The Baker RMP (USDI 1989) directs the BLM to "continue identification of wildlife habitat requirements as other resource activity plans are prepared" (RMP p. 18). This EA addresses wildlife habitat requirements in relation to grazing activity planning for Powder River Canyon GU. In addition, the Baker RMP (USDI 1989, p. 98) provides the following resource objective, land use allocation, and management action for Powder River Canyon GU:

- **Objective** - Enhance winter bald eagle habitat. Maintain habitat for other raptors for nesting and hunting.
- **Allocation** - Restrict livestock use through seasons of use, utilization levels, and numbers on key wildlife areas (deer winter ranges).
- **Management Action** - Continue inventories and monitoring of sage-grouse, raptors, and mule deer.

3.6.2 Affected Environment

Endangered Species Act (ESA) Considerations

No established federal or state listed species are currently known to occur within Powder River Canyon GU. As a result, federally listed T&E species are not further analyzed in this EA. Several unlisted species identified as species of concern by the U.S. Fish and Wildlife Service (USFWS) are discussed in this section.

Wildlife habitat types present and management considerations

Powder River Canyon GU is comprised of sagebrush steppe habitat and one main riparian channel. No old growth juniper woodlands are present. Powder River Canyon GU is an area where connected habitat for wildlife species currently exists in a relatively unfragmented condition. Given the dominance of sagebrush steppe habitat, the following upland wildlife habitat management documents provide important insight and guidance relevant to the analysis area: (1) BLM national sage-grouse habitat conservation strategy (USDI 2004), (2) Greater Sage-

Grouse Conservation Assessment and Strategy for Oregon (Hagen 2011), and (3) BLM Technical Note 417 Assessing Big Sagebrush at Multiple Spatial Scales (Karl & Sadowski 2005).

All three documents listed above describe desirable habitat conditions and promote actions needed to conserve sage-grouse. In addition, each document highlights the importance of managing public land in a way that would support communities of sagebrush steppe species at the landscape level. According to Maser et al. (1984), about 100 to 190 species of rangeland wildlife either breed or feed within big sagebrush habitats, depending upon shrub structural characteristics. Other published documents also indicate substantial wildlife reliance upon sagebrush for all or part of their life history requirements. For instance, even though black-tailed jackrabbits (*Lepus californicus*) are not considered true sagebrush obligates, they are most often associated with sagebrush cover on public lands and are an important prey species for raptors or other mammalian predators. Therefore, the ecological web for wildlife in sagebrush steppe is quite complex and BLM NEPA analysis must go beyond considerations that address true sagebrush-dependent species only.

Sagebrush-dependent wildlife either known to occur or very likely to occur within Powder River Canyon GU include the following:

- **Birds** - Greater Sage-Grouse (*Centrocercus urophasianus*), sage sparrow (*Amphispiza belli*), black-throated sparrow (*Amphispiza bilineata*), lark sparrow (*Chondestes grammacus*), and sage thrasher (*Oreoscoptes montanus*)
- **Mammals** - sagebrush vole (*Lemmiscus curtatus*) and elk (*Cervus elephus*)

By practicing good land use stewardship likely to the benefit of multiple species of wildlife, the BLM may then avoid the future need for listing animals under protection of the ESA. For grazing permit renewal purposes, this objective to promote healthy wildlife communities may be met by accomplishing the following:

1. Promote proper grazing use consistent with the S&Gs.
2. Limit the geographic extent of grassland habitats, or those rangelands that support less than 5 percent sagebrush canopy cover. Sagebrush shrubland habitats (> 5 percent sagebrush canopy cover) typically support much more diverse wildlife communities than grasslands (< 5 percent sagebrush canopy cover) (Karl & Sadowski 2005).
3. Conservation focus to retain ≥70 percent of Greater Sage-Grouse range as sagebrush habitat in advanced structural stages, Sagebrush Classes 3, 4 or 5, with an emphasis on Classes 4 and 5. The remaining 30 percent could include areas of juniper and conifer encroachment, non-sagebrush shrubland, and grassland (either from natural or anthropogenic disturbance) that potentially can be enhanced (Hagen 2011).

General Wildlife

Game species present in Powder River Canyon GU include mule deer (*Odocoileus hemionus*), elk, coyote (*Canis latrans*), and chukar (*Alectoris chukar*). Representative non-game species include red-tailed hawk (*Buteo jamaicensis*), golden eagle (*Aquila chrysaetos*), sage sparrow,

common nighthawk (*Chordeiles minor*), horned lark (*Eremophila alpestris),* and western meadowlark (*Sturnella neglecta*). Table 4 provides information on wildlife of management importance in Powder River Canyon GU according to season of use and key habitat characteristics.

Table 4. Wildlife of Management Importance According to Season of Use and Key Habitat Characteristics

Wildlife of Management Importance within Powder River Canyon GU	Season of Use	Principal Habitat Dependency for Forage, Cover, Structure, and Security
Rocky Mountain elk, mule deer	Spring through fall	Mixed shrublands and grasslands
*Greater Sage-Grouse[1]	Spring through winter	Shrublands Winter use – at least 10% sagebrush canopy cover Nesting use – at least 15%-25% or more sagebrush canopy cover Brooding- canopy cover of at least 15% of grasses and forbs
*Sagebrush vole, *horned lark, *western meadowlark, *sage sparrow[1], *sage thrasher[1]	Spring through summer	Shrublands At least 10% sagebrush canopy cover

*Species associated with shrub steppe habitats that are at risk throughout the west that have declined substantially in the Interior Columbia Basin area since historical times.
[1]These species are a focal species for the Partner in Flight Conservation Landbirds in the Columbia Plateau of Eastern Oregon and Washington

Special status wildlife and species of local importance

Four wildlife species that are known to breed on public lands, use public land for part of their life history requirements, or have potential habitat located within Powder River Canyon GU are provided special status by the BLM. These species include gray wolf (*Canis lupus*), Greater Sage-Grouse, pallid bat (*Antrozous pallidus*), and Townsend's big-eared bat (*Corynorhinus townsendii*). Big game and neotropical migratory bird species are other wildlife of importance discussed in this section.

Brief life history narratives for special status wildlife and their habitat in Powder River Canyon GU are provided below:

Gray wolf

Gray wolves have been located relatively close to Powder River Canyon GU. The Keating GU is the nearest area within the Baker Resource Area where wolf activity has been verified on public lands. However, wolves will not be further analyzed within this EA because there is no documented denning or rendezvous sites and the proposed livestock grazing alternatives would not change habitat distribution or alter prey opportunities for big game. Furthermore, proper grazing practices and management for wolves would be consistent with the Oregon Wolf Management and Conservation Plan (2010), which has conservation mitigations habitat.

Sage-grouse

For this analysis, the BLM used the Oregon Conservation Strategy (Hagen 2011), 12 month finding from USFWS (2010), and Greater Sage-Grouse monographs (Connelly et al. 2011) to develop alternatives and design features as well as contribute to the scientific background of Greater Sage-Grouse (hereafter referred to as sage-grouse).

According to ODFW, Salt Creek Allotment encompasses 1,217 acres of sage-grouse core habitat, which accounts for 0.01 percent of the sage-grouse habitat in the State of Oregon and 0.62 percent of the sage-grouse habitat within the Baker Resource Area.

There are three leks within the boundary of Powder River Canyon GU, all of which are on public lands and one is within Salt Creek Allotment. Grazing permits on public lands with identified leks outside of Salt Creek Allotment were renewed under a DNA because all rangeland health standards (including Standard 5) were met. Five leks are located 0.4 to 2 miles away from the area analyzed in this EA. Trend lek counts for this area are considered by ODFW decreasing. However, the lek count throughout Baker County is considered stable to slightly decreasing (ODFW 2011).

The vegetative community within Powder River Canyon GU consists of Wyoming big/basin big sagebrush with an understory of bluebunch wheatgrass, Idaho fescue, and needlegrass. Such a vegetative community is capable of providing the vegetation structure needed for nesting sage-grouse (Braun et al. 1977; Braun et al. 2005; Connelly et al. 2000). The understory grasses are also important in providing screening cover for brood-rearing (France et al. 2008). In addition, on average, most sage-grouse choose to nest within four miles from a lek site (Hagen 2005; Hagen 2011). Therefore, the vegetation and proximity to leks in Salt Creek Allotment is conducive to providing suitable nesting habitat.

Salt Creek Allotment has potential winter sage-grouse habitat in the form of pockets of low sagebrush and southern or western aspects that have 20 percent sagebrush cover (Hagen 2011).

The USFWS identified seven threats to destruction, modification, or curtailment of habitat or range of sage-grouse. These threats are: (1) habitat conversion for agriculture, urbanization and infrastructure, (2) fire, (3) invasive plant and juniper encroachment, (4) grazing, (5) energy development, (6) climate change, and (7) habitat fragmentation. For this analysis, the focus will be threat (4) grazing. A full analysis of the six other threats to sage-grouse habitat is available in the Pedro Mountain EA (USDI 2012).

Big Creek, Lower Powder, Farely Hills, Big Rattlesnake, and Powder River Canyon allotments within Powder River Canyon GU permit renewal maintained livestock management consistent with conserving sage-grouse habitat on approximately 4,675 acres of public lands within the Northern Great Basin sage-grouse population. Allotments that were classified by the BLM as meeting all rangeland health standards (including Standard 5 for wildlife) were renewed under DNAs: OR-035-07-007 and DOI-BLM-OR-V050-2009-011.

Pallid bat Townsend's big-eared bats

Pallid bats are found in arid deserts, juniper woodlands, grasslands, and sagebrush shrub-steppe habitats that often have a rock outcrop component with water nearby. They are less abundant in evergreen and mixed conifer woodlands; however, they utilize edge habitat that have this characteristic (Crampton and Barclay 1998). They typically roost in rock crevices, less often in caves, tree hollows, and abandoned mines. Roosting habitat often favored by this bat (i.e., crevices in cliffs and rock outcrops) provides protection from many kinds of disturbance. Powder River Canyon GU provides steep rocky banks that would be congruent to pallid bat habitat needs. Bat surveys in close proximity to Powder River Canyon GU have documented that hoary bats and big and little brown bats inhabit this area, but pallid bats have not been caught.

Townsend's big-eared bats will use a variety of habitats, usually near caves, abandoned mineshafts, or large rock crevices (Sherwin et al. 2000). Although Powder River Canyon GU has habitat that would be suitable for Townsend's big-eared bats; there are no known man-made structures that would provide additional housing.

The only known correlation with bat and livestock use is within the riparian areas (pers. com., Michelle Caviness Vale District, wildlife biologist). Riparian corridors are important for bat foraging because they naturally contain a greater density of insects. The unnamed stream within Salt Creek Allotment totals 0.50 miles and rated not meeting riparian rangeland health standards.

Big game

Salt Creek Allotment is mainly composed of a shrub-steppe habitat community with two perennial creeks (Salt Creek and an unnamed tributary of Power River). The BLM considers all of Salt Creek Allotment as critical big game habitat. Some common big game species within the allotment include mule deer, elk, and pronghorn. Proper grazing use practices and careful application of land treatments conserves and benefits big game habitat.

Neotropical Migratory Bird Species

Under Executive Order 13186, the BLM is mandated to strive to protect, restore, enhance, and manage habitats of migratory birds, and prevent the further loss and degradation of habitats on public lands. The BLM also has the responsibility to adhere to the mandates set forth under the Migratory Bird Species Act of 1918, which implements various treaties and conventions between the U.S. and Canada, Japan, Mexico, and the former Soviet Union for the protection of migratory birds. Under the act, it is unlawful to pursue, hunt, take, capture (or kill) a migratory bird except as permitted by regulation (16 U.S. Code 703-704). In addition to the executive order and Migratory Bird Species Act, the BLM has a Memorandum of Understanding with Partners in Flight to stimulate and support an active approach to conservation of land birds in Oregon and Washington states. The overall goal of Partners in Flight bird conservation planning is to ensure long-term maintenance of healthy populations of native land birds.

Powder River Canyon GU provides habitat for neotropical migratory land birds (i.e., birds that migrate that are not waterfowl or birds associated with wetland areas) that prefer sagebrush,

grassland, and juniper woodland habitats. Migratory bird species use suitable habitat in this area for nesting, foraging, and resting as they pass through on their yearly migrations. Grassland and sagebrush associated species present seasonally include sage sparrow, loggerhead shrike (*Lanius ludovicianus*), brewers sparrow (*Spizella breweri*), sage thrasher, and lazuli bunting (*Passerina amoena*). Other species observed or expected to occur in the project area include western meadowlark and ferruginous hawk. Within Powder River Canyon GU where sagebrush is in an intermediate serial stage and in close proximity to riparian areas, migratory bird diversity and richness is relatively high.

3.6.3 Direct and Indirect Impacts

Impacts are quantified where possible. In absence of quantitative data, the best professional judgment based on scientific and other literature was used. Impacts are sometimes described using ranges of potential impacts in qualitative terms, if appropriate. The intensity or magnitude of impacts are also described, where possible, using the following guidance:

1. Negligible impacts would be at or below the level of detection, and the changes would be so slight that they would not be of any measurable or perceptible consequence to individuals or the population as a whole.

2. Minor impacts would be detectable but localized, small, and of little consequence to the population of any species. Mitigating measures, if needed to offset adverse effects, would be simple and successful.

3. Moderate impacts would be readily detectable and localized, with potential consequences at the population level. Mitigating measures, if needed to offset adverse effects, would be extensive and would probably be successful.

4. Major impacts would be obvious and would result in substantial consequences to the populations in the region. Extensive mitigating measures would be needed to offset adverse effects, and their success would not be guaranteed. Actions that would likely result in effects to special status species of this severity would not be authorized or undertaken.

Alternative 1

Sage-grouse

Under Alternative 1, uplands areas would continue to meet rangeland health standards and thus provide suitable nesting, brood rearing, and winter habitat for sage-grouse. Therefore the effect to upland sage-grouse habitat would continue to be beneficial.

The riparian area along the unnamed tributary, however, would continue to not meet riparian rangeland health standards under Alternative 1, which would not meet the objective set forth by the Baker RMP (USDI 1989) for Powder River Canyon GU that identifies restricting livestock use through various management efforts in key wildlife areas. Crawford et al. (2004) documents that riparian areas are especially important for the abundance of insects and hiding cover both in

early and late seasons of sage-grouse lifecycles and attributes healthy riparian areas to light-moderate grazing in both upland and riparian areas. Due to not moving towards meeting riparian rangeland health standards, along with not setting a utilization level that would be beneficial, impacts to sage-grouse riparian habitat under Alternative 1 would be adverse and minor, while impacts at the pasture and GU level would be negligible due to the small area involved.

Pallid and Townsends bats

Riparian corridors are important for bat foraging because they naturally contain a greater density of insects. Insect populations rely heavily on how much vegetation there is to carry out lifecycles (Crawford et al. 2004). Alternative 1 would result in 0.50 miles of riparian area not meeting rangeland health standards. In addition, a minimum stubble height for the riparian area would not be set, which may result in vegetation abundance within the riparian channel not being sufficient to maintain adequate insect levels for bats. Adverse impacts to pallid bat would be minor in magnitude at the pasture level, but negligible at the GU level due to the small area involved.

Big game

Livestock management under Alternative 1 is consistent with current research that has been shown to improve elements of upland rangeland health and reduces the probability of converting native plant communities to non-native annual grass dominated. Therefore the effect to upland big game habitat would continue to be beneficial.

Neotropical Migratory Bird Species

Livestock management under Alternative 1is consistent with current research that has been shown to improve elements of upland rangeland health and reduces the probability of converting native plant communities to non-native annual grass dominated. Therefore the effect to upland neotropical and migratory bird habitat would continue to be beneficial.

Riparian areas are important for neotropical and migratory birds. Under Alternative 1 the riparian area in the Salt Creek Allotment would continue to not meet riparian rangeland health standards. The amount of riparian area not meeting rangeland health standards is 0.50 miles therefore the effect to neotropical and migratory birds would be negligible to minor and adverse.

General Wildlife

Livestock management under Alternative 1 is consistent with current research that has been shown to improve elements of upland rangeland health and reduces the probability of converting native plant communities to non-native annual grass dominated. Therefore the effect to upland general wildlife habitat would continue to be beneficial.

Riparian areas are an important for general wildlife species. Under Alternative 1 the riparian area in the Salt Creek Allotment would continue to not meet riparian rangeland health standards. The amount of riparian area not meeting rangeland health standards is 0.50 miles therefore the effect to general wildlife would be negligible to minor and adverse.

Alternative 2

Sage-grouse

Excluding livestock grazing from Salt Creek Allotment under Alternative 2 would insure adequate herbaceous cover would be left for nest concealment. Such increased herbaceous cover, however, would result in increased fine fuels in the long term, leading to the potential for increased fire severity and elevate the risk of non-native annual grass establishment and spread. Therefore, the impacts of Alternative 2 are dependent on fire. If a high severity fire occurs, impacts would be adverse and minor. If fire frequency and severity were low, impacts would be beneficial and minor.

Five miles of fence would have to be built to exclude livestock from Salt Creek Allotment under Alternative 2. Although there have only been a few recorded instances of sage-grouse striking new fences, sage-grouse fence collisions can be significantly reduced by using fence reflectors. Therefore, to reduce the magnitude of adverse impacts, anti-strike reflectors and end-caps would be required on all new fences. To further reduce adverse effects, fences would also be constructed using ODFW's strategy recommendations for fence placement within sage-grouse core habitat (Hagen 2011). Adverse impacts from the new fence would thus be negligible.

Terminating livestock grazing would make significant progress towards meeting riparian rangeland health standards by allowing sufficient vegetation cover to protect streambanks during high flows. This would be beneficial for sage-grouse because it would ensure that there is enough residual grass stubble height for hiding cover and as a food source when insects emerge (Crawford et al. 2004). Impacts to sage-grouse habitat would be beneficial and minor in magnitude at the pasture level, but negligible at the GU level due to the small area involved.

Pallid and Townsends bats

Terminating livestock grazing under Alternative 2 would make significant progress towards meeting riparian rangeland health in Whiskey Gulch Pasture and allow the growth of sufficient vegetation within the stream channel, which would indirectly support high insect levels that bats feed on. Impacts at the pasture level would be beneficial and minor, limited to the 0.50 miles of riparian area that would be improved. Impacts at the GU level would be beneficial and negligible due to the small area involved.

Big game

The effect to big game habitat is dependent on fire frequency and severity. Research shows that increasing fire frequency and severity increases the probability of converting native sagebrush to a non-native annual grass dominated plant community. Excluding livestock grazing will increase the amount of fine fuel which the BLM believes has the potential to increase both fire frequency and severities. Therefore if fires occur, there is a higher probability of conversion to non-native annual grass when compared to Alternative 1 which would result in minor adverse effects to big game habitat. Conversely, if fires do not occur in the Salt Creek Allotment the BLM expects that the effect to big game habitat would be the same as Alternative 1.

Neotropical and Migratory Bird Species

The effect to upland neotropical and migratory bird habitat is dependent on fire frequency and severity. Research shows that increasing fire frequency and severity increases the probability of converting native sagebrush to a non-native annual grass dominated plant community. Excluding livestock grazing will increase the amount of fine fuel which the BLM believes has the potential to increase both fire frequency and severities. Therefore if fires occur there is a higher probability of conversion to non-native annual grass when compared to Alternative 1 which would result in minor adverse effects to neotropical and migratory bird habitat. Conversely, if fires do not occur in the Salt Creek Allotment the BLM expects that the effect to upland neotropical and migratory bird habitat would be the same as Alternative 1.

Neotropical and migratory birds rely on riparian areas. Under Alternative 2, livestock grazing would be excluded which would make significant progress towards meeting 0.50 miles of riparian area which would result in a negligible to minor effect to neotropical and migratory birds.

General Wildlife

Under Alternative 2, livestock grazing would be excluded from all 1,963 acres of public lands within the Salt Creek Allotment. This would allow of immediate response of increased forage and structure. Wildlife would not have to compete for food and other resources within this Allotment. However, overtime long-term livestock exclusion would result in increased fine fuels which can lead to increased fire severity; therefore, rangeland health which would be dependent on fire severity and frequency. If wildfires do not occur during the period that livestock grazing is excluded, upland rangeland health would remain at a level that meets vegetation resource objectives identified in the current RMP (USDI 1989a). However, if frequent fires or a high severity fire occur within the native intact sagebrush stands within the Salt Creek Allotment the BLM expects increases in invasive plants and noxious weeds which is supported by Bates et al. (2005). This would not be beneficial for big game and neotropical and migratory birds because forage and structure needs would be displaced. Therefore, the effects of Alternative 2 are dependent on fire. If fire frequency increases or a high severity fire occurs the effects would be minor and adverse. On the other hand minor beneficial effects would occur if fire frequency and severity is low.

Alternative 3

Sage-grouse

Impacts to sage-grouse habitat in the Middle and South pastures of Salt Creek Allotment would be the same as those described under the No Action Alternative. Impacts to the upland portions of Whiskey Gulch Pasture would be the same as described under Alternative 2, although the risk of the potential for increased fire severity would be limited to 866 acres. Excluding livestock grazing from Whiskey Gulch Pasture would have the same beneficial impacts to sage-grouse habitat related to the riparian area as those described under Alternative 2. Alternative 3 would also have the added benefit of not requiring additional fencing to be built, which would eliminate

the potential of sage-grouse striking new fences. Overall, impacts under Alternative 3 would be beneficial and minor at the pasture level but negligible at the GU level.

Pallid and Townsends bats

Because Alternative 3 would exclude livestock from the riparian areas of the Salt Creek Allotment, impacts would be the same as those described under Alternative 2.

Big game

Impacts due to removing livestock grazing on 866 acres in Whiskey Gulch Pasture would be the same as described under Alternative 2, although such impacts would be less extensive as they would be limited to 866 acres (compared to 1,217 acres under Alternative 2).

Neotropical and Migratory Bird Species

Impacts due to removing livestock grazing on 866 acres in Whiskey Gulch Pasture would be the same as described under Alternative 2, although such impacts would be less extensive as they would be limited to 866 acres (compared to 1,217 acres under Alternative 2).

General Wildlife

Impacts due to removing livestock grazing on 866 acres in Whiskey Gulch Pasture would be the same as described under Alternative 2, although such impacts would be less extensive as they would be limited to 866 acres (compared to 1,217 acres under Alternative 2).

Alternative 4

Sage-grouse

Impacts to upland sage-grouse habitat would be the same as identified in the No Action Alternative. Impacts to riparian sage-grouse habitat would be the same as identified under Alternative 2, although the risk of sage-grouse striking new fences would be greatly reduced as only 1 mile of new fence would be constructed under Alternative 4, compared to 5 miles under Alternative 2. The same mitigations would be applied to the new fences as described under Alternative 2 (e.g., anti-strike reflectors, end-caps, use of ODFW's strategy recommendations for fence placement), which would further reduce the potential for adverse impacts. Overall, impacts to sage-grouse habitat would be beneficial and minor at the pasture level, and beneficial and negligible at the GU level.

The building of the stock water trough outside the riparian exclosure would potentially lead to increased mosquito population. West Nile virus, which is spread by mosquitoes, can cause bird motility. Since the stock water trough would be relatively small, the increase in mosquitoes that could spread West Nile virus is insignificant (pers. comm., David Naugle, 2011).

Pallid and Townsends bats

Because Alternative 4 would exclude livestock from the riparian areas of the Salt Creek Allotment, impacts would be the same as those described under Alternatives 2 and 3.

Big game

Livestock management under Alternative 4 is consistent with current research that has been shown to improve elements of upland rangeland health and reduces to probability of converting native plant communities to non-native annual grass. Therefore, the BLM expects that upland rangeland health standards would continue to be met.

Neotropical and Migratory Bird Species

Livestock management under Alternative 4 is consistent with current research that has been shown to improve elements of upland rangeland health and reduces to probability of converting native plant communities to non-native annual grass. Therefore the effect to upland neotropical and migratory bird habitat would be beneficial.

Riparian areas are an important for neotropical and migratory birds. Under Alternative 4 the riparian area in the Salt Creek Allotment would make significant progress towards meeting riparian rangeland health standards. The amount of riparian area that would be improved is 0.50 miles therefore the beneficial effect to neotropical and migratory birds would be negligible to minor.

General Wildlife

Alternative 4 would exclude livestock grazing on 13 acres adjacent to the unnamed tributary in the Whisky Gulch pasture. Excluding livestock grazing would improve 0.50 mile reach of riparian area which is currently not meeting rangeland health standards. This improvement in riparian function and condition would have a beneficial effect on general wildlife, albeit negligible to minor due to the small size of riparian area currently not meeting riparian rangeland health standards.

3.6.4 Cumulative Impacts

Past and present actions

General wildlife and neotropical and migratory bird species

Past fire, livestock grazing and large scale soil disturbing projects has shaped the structural component of lands administered by the Baker Resource Area BLM. Specifically, 44,761 acres Wyoming and mountain big sagebrush has been replaced with non-native grasses. Such changes in the structural component may not suit the needs of some general and neotropical and migratory bird wildlife species.

Greater Sage-Grouse

The BLM used five listing factors to identify past and present projects that the USFWS believes have adverse effects on sage-grouse habitat or population, which are discussed in detail below under "Reasonably Foreseeable Future Actions." The combined impacts of past and present land management actions on sage-grouse population have resulted in a non-significant negative population trend for lands (private and public) within the Baker Resource Area.

Past and present actions that have led to impacts to sage-grouse habitat in Powder River Canyon GU are limited to livestock grazing and wildfire. These two actions have resulted in the lower elevation Wyoming big sagebrush and mountain big sagebrush to convert to a non-native annual grass dominated community within some pastures within Powder River Canyon GU, which is not optimal for sage-grouse habitat needs, such as adequate vegetative cover for nesting. Livestock grazing has also lead to 0.50 miles of the unnamed tributary in Whiskey Gulch Pasture to not meet riparian rangeland health standards, which has reduced the quality of sage-grouse habitat in terms of residual grass stubble height for the use of hiding and as a food source when insects emerge.

Pallid and Townsends bats

In Powder River Canyon GU, the only past or present action that could affect pallid bat habitat is livestock grazing, which has resulted in 0.50 miles of riparian area in Whiskey Gulch Pasture not meeting rangeland health standards. Since insect populations heavily rely on how much vegetation there is to carry out lifecycles (Crawford et al. 2004), not meeting rangeland health standards has limited vegetation abundance within the riparian channel, which may not be sufficient to maintain adequate insect levels for bats.

Big game

Past and present actions that have had the biggest adverse impact to big game habitat is large ground disturbance (roads, power lines, railroads, housing, etc.) and conversion of native sage-brush to non-native annual grass or other noxious weeds or invasive plants, whereas, light to moderate livestock grazing has a beneficial effect to elk big game. Within lands administered by the BLM in the Baker Resource Areas planning area there are 1,302 miles of power lines (66 miles on BLM lands), 740 miles of railroads (17 miles on BLM lands) and 31,790 miles of roads (1,286 miles on BLM lands). In addition 13,406 acres of native sagebrush has been converted to non-native annual grass on lands administered by the BLM and an unknown acreage on private lands. Beneficial effects to big game habitat has been realized through past modifications to livestock grazing that has set forage utilization to moderate levels.

Reasonably Foreseeable Future Actions

General wildlife and neotropical and migratory bird species

No projects are planed that would result in large scale conversion of native sagebrush into non-native grass communities therefore the BLM believes that reasonable future actions will not affect general wildlife and neotropical and migratory bird species.

Greater Sage-Grouse

While analysis of foreseeable future actions for the other wildlife species discussed in this EA is limited to the GU level, the analysis of foreseeable future actions that may affect sage-grouse is expanded to the resource area level due to the potential for listing of the species.

The USFWS (2010) completed a 12-month finding on petitions to list sage-grouse as threatened or endangered under the ESA. Results of the 12-month findings were listing sage-grouse (range wide) as a threatened or endangered species is warranted, but precluded by higher priority listing actions. The 12-month findings used the 5 factors provided in section 4(a) (1) of the ESA in the evaluation of sage-grouse which are: 1) present or threatened destruction, modification or curtailment of habitat or range; 2) overutilization of habitat for commercial, recreational, scientific or educational purposes; 3) disease or predation; 4) inadequacy of existing regulation; or 5) other natural or manmade factors affecting its continued existence.

Factor 1: present or threatened destruction, modification or curtailment of habitat or range
The USFWS service identified six threats to destruction, modification, or curtailment of habitat or range, which are 1) habitat conversion for agriculture, urbanization, and infrastructure; 2) fire; 3) invasive plant and juniper encroachment; 4) grazing; 5) energy development; 6) climate change; and 7) habitat fragmentation.

There are no reasonable foreseeable future actions to increase agriculture, urbanization, or infrastructure in sage-grouse habitat on public lands administered by the Baker Resource Area. The BLM is not aware of any future plans to increase agriculture, urbanization, or infrastructure on private lands in sage-grouse habitat within the Baker Resource Area administrative boundary.

Two juniper reduction projects that plan to use prescribed fire as a treatment method are proposed within the Baker Resource Area, but not within Powder River Canyon GU. These projects involve prescribed fires that would be conducted when burning conditions result in low severity fires, which would reduce the risk of converting the treated area to non-native annual grass.

The NRCS has received funding to map and treat invasive plants (medusahead, wild rye, and cheatgrass) and juniper on private lands within the Baker Resource Area. This project would not occur in Powder River Canyon GU, but within an adjacent GU. The number of private land acres that would be restored is not known. The Baker Field Office is working on a vegetation treatment EA that would authorize the use of herbicides effective in controlling non-native grasses and other invasive and noxious weeds, which would occur in the entire resource area, including Powder River Canyon GU. The number of acres of non-native annual grass that would be treated is unknown. In addition, the BLM would treat 1,480 acres of juniper within sage-grouse habitat on public lands under direction of the Mormon Basin Fuels Reduction EA.

The Baker Field Office is scheduled to complete grazing permit renewal NEPA for Keating and Baker County Miscellaneous GUs that contain sage-grouse habitat and adjoin Powder River Canyon GU. At the time of writing this EA, the BLM expects to complete the analysis for the Keating GU in fiscal year 2013 and Baker County Miscellaneous GU in fiscal year 2014. The total amount of sage-grouse habitat contained within these GUs is 155,748 aces, which accounts

for approximately 80 percent of the sage-grouse habitat administered by the Baker Field Office. Changes to livestock management in these GUs would take into consideration ODFW guidance for conserving sage-grouse and the best available science, which would improve sage-grouse habitat.

The only reasonable foreseeable future energy project within the Baker Resource Area is the Boardman to Hemingway 500kv power line right-of-way (ROW). This project is in the developmental phase and the alternatives have not been solidified, but it would not likely cut across Powder River Canyon GU. In addition, the BLM has worked with ODFW and USFWS in developing alternatives that would minimize and mitigate adverse effects to sage-grouse habitat.

Reasonably foreseeable future juniper reduction projects and livestock grazing would result in increased greenhouse gas concentrations. However, the amount of CO_2 equivalent would be under the EPA new regulations that require mandatory reporting of GHGs if production exceeds 25,000 metric tons of CO_2 equivalent per year for certain industrial and intensive agricultural activities (40 CFR § 98.2; 74 FR 56374). Specifically, future livestock grazing on all lands administered by the Baker Resource Area is expected to be 9,240 metric tons of CO_2 equivalents per year (see section 3.3). In addition, future BLM juniper reductions projects are likely to produce 4,440 metric tons of CO_2 per year. Both reasonably foreseeable future actions are below the minimum reporting requirement established by the EPA, which is about 0.0000023 of 1 percent of total annual national emissions of 6 billion metric tons. Therefore, these projects would have immeasurable effects to climate change.

Reasonably future juniper and non-native annual grass reduction projects on both private and public lands within the Baker Resource Area would reduce sage-grouse habitat fragmentation by restoring the sites back to a native sagebrush community. The level of habitat fragmentation reduction would be dependent on how many acres are treated. At the time of writing this document, the BLM is uncertain how many acres of private land would be treated by the NRCS. However, the Baker Field Office plans to treat 1,480 acres of juniper in sage-grouse habitat. In addition, mitigation would be required to offset adverse effects to sage-grouse habitat fragmentation caused by the Boardman to Hemingway 500kv power line ROW, and long-term adverse impacts from mines would be reduced as such mines would need to be reclaimed pursuant to the mining plan of operation. In summary, overall reasonable future actions would reduce sage-grouse habitat fragmentation when compared to current levels.

Factor 2: overutilization of habitat for commercial, recreational, scientific or educational purposes

There are no reasonably foreseeable future actions that would result in overutilization of habitat for commercial, recreational, scientific or educational purposes

Factor 3: Disease or Predation

There are no reasonably foreseeable future actions that would increase the threat of disease, specifically West Nile virus. West Nile virus is spread by mosquitoes and the USFWS identifies stock ponds as a possible breeding ground for mosquitoes. There are no reasonably foreseeable future actions to increase the amount of stock ponds within public lands within the Baker Resource Area.

The BLM expects that reasonable future juniper reduction actions would reduce sage-grouse predation by removing trees in sage-grouse nesting habitat. Predatory birds use tall structures (trees, power lines, etc.) as hunting perches; therefore, removing trees should reduce the amount of suitable perches. The Boardman to Hemingway 500kv power line ROW project would mitigate the effects of predation by installing perch guards in areas where sage-grouse predation is a concern. Livestock grazing permit renewal NEPA would not have an effect on predation since the BLM expects to set upland forage utilization at or more restrictive than identified by France et al. (2008) as needed to conceal nests.

Factor 4: Inadequacy of existing regulation

The 12-month findings state, "If an RMP contains specific direction regarding sage-grouse habitat, conservation, or management, it represents a regulatory mechanism that has the potential to ensure that the species and its habitats are protected during permitting and other decision-making on BLM lands." The Baker Field Office has recently completed a Draft RMP/EIS and is currently working on the Final RMP/EIS. All action alternatives in the Draft RMP/EIS contain specific direction that would ensure sage-grouse and its habitat is protected during permitting and other decision-making activities on public lands regarding sage-grouse habitat conservation and/or management.

Factor 5: Other Natural or Manmade Factors Affecting its Continued Existence

Numerous factors have caused sage-grouse mortality, and probably morbidity, such as pesticides, contaminants, as well as factors that contribute to direct and indirect disturbance to sage-grouse and sagebrush, such as recreational activities. Animal and Plant Inspection Service is expected to continue to treat grasshoppers on 0 to 2,400 acres a year of public and private lands in sage-grouse habitat within the Baker Resource Area in the reasonable foreseeable future.

The BLM has no plans to store or use contaminates as specified by USFWS (2010) on public lands in the Baker Resource Area in the reasonable foreseeable future. In addition, the BLM does not plan any actions that would increase recreational activities, including off-highway vehicle (OHV) use, in sage-grouse habitat.

Overall Impacts of Reasonable Foreseeable Actions on Sage-grouse

Future juniper and non-native annual grass reduction treatments that would occur on private and public lands would improve sage-grouse habitat, which is supported by the USFWS 12-month finding. Potential adverse effects of future power line ROW would be mitigated by seeding the disturbed sites and installing perch guards. Overall, effects of reasonable foreseeable future actions would result in beneficial minor to moderate effects to sage-grouse habitat within the Baker Resource Area.

Pallid and Townsends bats

The only reasonable foreseeable future project within the Baker Resource Area that may have an effect on big game winter range is the Boardman to Hemingway 500kv power line right-of-way (ROW). This project is in the developmental phase and the alternatives have not been solidified, but it would not likely cut across Powder River Canyon GU. The Boardman to Hemingway project is likely to have adverse effects to Pallid and Townsends bats but the effects will be negligible due to the limited amount of perennial water that the project would cross.

Big game
The only reasonable foreseeable future project within the Baker Resource Area that may have an effect on big game winter range is the Boardman to Hemingway 500kv power line right-of-way (ROW). This project is in the developmental phase and the alternatives have not been solidified, but it would not likely cut across Powder River Canyon GU. The BLM has worked with ODFW to develop mitigation to offset adverse effects to big game habitat.

Cumulative Effects by Alternative

Alternative 1

General wildlife and neotropical migratory bird species

No reasonable foreseeable projects are planed that would result in large scale conversion of native sagebrush into non-native grass communities. Therefore the BLM expects that current habitat for general wildlife and neotroprical migratory bird species would be maintained and cumulative effects of Alternative 1 would be limited to what is identified in the past and present affects section.

Greater Sage-Grouse

The impacts to sage-grouse as a result of past, present, and reasonable foreseeable future actions in the Baker Resource Area would be the same under all alternatives. The combined impacts, including the direct and indirect impacts under Alternative 1, would result in higher quality sage-grouse habitat due to juniper reduction, non-native grass treatments, and changes to livestock grazing; slight reduction in sage-grouse habitat quality due to future power line ROW; and 0.50 miles of riparian area that would not make significant improvement towards meeting rangeland health standards. Overall, cumulative impacts to sage-grouse habitat under Alternative 1would be beneficial and minor.

Pallid and Townsends bats

The impacts to Pallid and Townsends bats as a result of past, present, and reasonable foreseeable future actions in the Baker Resource Area would be the same under all alternatives. The combined impacts, including the direct and indirect impacts under Alternative 1, would result in a slight reduction in bat habitat quality due to future power line ROW; and 0.50 miles of riparian area that would not make significant improvement towards meeting rangeland health standards. Overall, cumulative impacts to bat habitat under Alternative 1would be adverse and negligible.

Big game

The impacts to big game as a result of past, present, and reasonable foreseeable future actions in the Baker Resource Area would be the same under all alternatives. The combined impacts, including the direct and indirect impacts under Alternative 1, would result in a slight reduction in big game habitat quality due to future power line ROW; and 0.50 miles of riparian area that

would not make significant improvement towards meeting rangeland health standards. Overall, cumulative impacts to bat habitat under Alternative 1would be adverse and negligible.

Alternative 2

General wildlife and neotropical and migratory bird species

No reasonable foreseeable projects are planed that would result in large scale conversion of native sagebrush into non-native grass communities. Therefore the cumulative effects of Alternative 2 would be limited to what is identified in the past and present affects section.

Greater Sage-Grouse

The combined effects, including the direct and indirect effects under Alternative 2, would be higher quality sage-grouse habitat due to juniper reduction, non-native grass treatments, and changes to livestock grazing; slight increases in habitat fragmentation as a result of future power line ROW; and improvement to 0.50 miles of riparian habitat that would move towards meeting rangeland health standards. The magnitude of beneficial impacts when compared to Alternative 1 would be dependent on potential increases in fire frequency or severity. Specifically, if fire frequency or severity increases in Salt Creek Allotment because of excluding livestock grazing, the magnitude of beneficial effects would be reduced compared to Alternative 1. On the other hand, if fire frequency or severity does not change, the magnitude of beneficial impacts would be negligibly increased under Alternative 2.

Pallid and Townsends bats

The combined impacts, including the direct and indirect impacts under Alternative 2, would result in a slight reduction in bat habitat quality due to future power line ROW and a slight improvement in bat habitat as a result of 0.50 miles of riparian area that would make significant improvement towards meeting rangeland health standards. The magnitude of beneficial impacts when compared to Alternative 1 would be dependent on potential increases in fire frequency or severity. Specifically, if fire frequency or severity increases in Salt Creek Allotment because of excluding livestock grazing, the magnitude of beneficial effects would be reduced compared to Alternative 1. On the other hand, if fire frequency or severity does not change, the magnitude of beneficial impacts would be negligibly increased under Alternative 2.

Big game

The combined impacts, including the direct and indirect impacts under Alternative 2, would result in a slight reduction in big game habitat quality due to future power line ROW and a slight improvement in big game habitat as a result of 0.50 miles of riparian area that would make significant improvement towards meeting rangeland health standards. The magnitude of beneficial impacts when compared to Alternative 1 would be dependent on potential increases in fire frequency or severity. Specifically, if fire frequency or severity increases in Salt Creek

Allotment because of excluding livestock grazing, the magnitude of beneficial effects would be reduced compared to Alternative 1. On the other hand, if fire frequency or severity does not change, the magnitude of beneficial impacts would be negligibly increased under Alternative 2.

Alternative 3

General wildlife and neotropical and migratory bird species

No reasonable foreseeable projects are planed that would result in large scale conversion of native sagebrush into non-native grass communities. Therefore the cumulative effects of Alternative 3 would be limited to what is identified in the past and present affects section.

Greater Sage-Grouse

Cumulative impacts would be similar to Alternative 2, with the exception that impacts due to potential fire severity and frequency would be less widespread (i.e., limited to Whiskey Gulch pasture). As a result, if fire frequency or severity increases in Salt Creek Allotment because of excluding livestock grazing in Whiskey Gulch pasture, the magnitude of beneficial effects would be reduced compared to Alternative 1, but greater than under Alternative 2. If fire frequency or severity does not change, the magnitude of beneficial impacts would be the same as under Alternative 2.

Pallid and Townsends bats

Cumulative impacts would be similar to Alternative 2, with the exception that impacts due to potential fire severity and frequency would be less widespread (i.e., limited to Whiskey Gulch pasture). As a result, if fire frequency or severity increases in Salt Creek Allotment because of excluding livestock grazing in Whiskey Gulch pasture, the magnitude of beneficial effects would be reduced compared to Alternative 1, but greater than under Alternative 2. If fire frequency or severity does not change, the magnitude of beneficial impacts would be the same as under Alternative 2.

Big game

Cumulative impacts would be similar to Alternative 2, with the exception that impacts due to potential fire severity and frequency would be less widespread (i.e., limited to Whiskey Gulch pasture). As a result, if fire frequency or severity increases in Salt Creek Allotment because of excluding livestock grazing in Whiskey Gulch pasture, the magnitude of beneficial effects would be reduced compared to Alternative 1, but greater than under Alternative 2. If fire frequency or severity does not change, the magnitude of beneficial impacts would be the same as under Alternative 2.

Alternative 4

General wildlife and neotropical and migratory bird species

No reasonable foreseeable projects are planed that would result in large scale conversion of native sagebrush into non-native grass communities. Therefore the cumulative effects of Alternative 3 would be limited to what is identified in the past and present affects section.

Pallid and Townsends bats

The combined impacts, including the direct and indirect impacts under Alternative 4, would result in a slight reduction in bat habitat quality due to future power line ROW and a slight improvement in bat habitat as a result of 0.50 miles of riparian area that would make significant improvement towards meeting rangeland health standards.

Big game

Overall, cumulative impacts would be the same as described under Alternative 2 under the scenario of no increases of fire frequency or severity. When considering that Alternative 2 also carries the potential for adverse impacts if fire frequency or severity were increased due to no grazing in the Salt Creek Allotment , Alternative 4 is thus more likely to have cumulative beneficial impacts to big game habitat than Alternative 2. In comparison to Alternative 1, impacts under Alterative 4 would be negligibly more beneficial to big game habitat due to the improvement of 0.50 miles of riparian area in Whiskey Gulch Pasture.

Greater Sage-Grouse

Overall, cumulative impacts would be the same as described under Alternative 2 under the scenario of no increases of fire frequency or severity. When considering that Alternative 2 also carries the potential for adverse impacts if fire frequency or severity were increased due to no grazing in the Salt Creek Allotment, Alternative 4 is thus more likely to have cumulative beneficial impacts to sage-grouse habitat than Alternative 2. In comparison to Alternative 1, impacts under Alterative 4 would be negligibly more beneficial to sage-grouse habitat due to the improvement of 0.50 miles of riparian area in Whiskey Gulch Pasture.

3.7 Cultural Resources

3.7.1 Land Use Plan Management Objectives

The Baker RMP (1989) indicates the following for cultural resources:

Resource Condition Objective

Protect and preserve cultural resources for their information potential and public values. Maintain historic properties for interpretation of mining and settlement.

Allocation

Identify uses for specific cultural properties in activity plans. Restrict the location of disturbing activities to avoid impact to cultural properties.

Management Action

Inventory and evaluate cultural properties in response to project proposals and management actions.

Evaluate historic mining properties for National Register nomination.

3.7.2 Affected Environment

Ethnographic Information

The Salt Creek Grazing Allotment Area is located on the boundary of two Native American cultural regions the Columbia Plateau to the north, and the Great Basin to the south. Wide sections of these areas were used by both cultures. A general conclusion can be made that the area was predominantly utilized by the: Cayuse, Umatilla, Nez Perce, Northern Paiute and Shoshone cultural groups. The Salt Creek Grazing Allotment Area is located in a low to moderate elevation zone and the Native American use is assumed to have been occasional to seasonal. Temporary camps, established for utilization of upland plant, fish, game and lithic resources were limited to spring, summer and early fall use.

This project is situated completely within the ceded territory of the Tribes that now compose the Confederated Tribes of Umatilla Indian Reservation (CTUIR). Suphan (1974) has provided detail with respect to the traditional areas frequented by the peoples who are now considered within the CTUIR.

"With respect to the Umatilla's:
The permanent camps or villages of the Umatilla Indians...were strung along both shores of the Columbia River from about the Gilliam-Morrow county line in Oregon upstream to the mouth of the Umatilla River; two other sites were located along the lower course of the Umatilla....

"During the summer treks, the Umatilla crossed over the Blue Mountains into the Grande Ronde Valley to numerous fishing, root-gathering, hunting and berry gathering areas. ...In none of these subsistence areas were the Umatilla the sole exploiters, Walla Walla, Cayuse and Nez Perce Indians were visiting these same spots..."

"Just east of the Grande Ronde Valley, the Umatilla exploited a spot on the Minam River, together with the Cayuse, Walla Walla and Nez Perce Indians, while they also journeyed into the Wallowa River Valley to subsistence spots about the present towns of Wallowa, Lostine, Enterprise, Joseph, and Wallowa Lake. These areas were also frequented by the neighboring Walla Walla, Cayuse and Nez Perce." Suphan, Robert J., *The Socio-Political Organization and*

Land Use Patterns of the Umatilla, Walla Walla and Cayuse Indians. MA dissertation. Columbia University, pp. 128-134.

For further elaboration of the prehistory of this area, please refer to C. Aikens, 1993, "Archaeology of Oregon". Native American cultural information can also be located in: Handbook of North American Indians, Vol. 11: Great Basin, (1986).

Tribal Interests

Many species of plants, terrestrial game and fish were important in the subsistence, life ways and economy of the tribes. Important terrestrial animals hunted by various tribes included bison (during precontact times), deer, elk, mountain sheep, pronghorn antelope, game birds, and small mammals such as rabbits and marmot. Anadromous and resident fish formed an important part of the diet. Some important plants included root crops of lomatiums (*Lomatium sp.*), yampah (*Perideridia gairdneri*) and bitterroot (*Lewisia rediviva*); and fruit plants such as serviceberry (*Amelanchior alnifolia)*, chokecherry, currant (*Ribes sp.)*, hawthorn (*Crataegus douglasii*), and elderberry (*Sambucus sp)*.

These and other traditional foods are still important to many tribes today. The CTUIR Department of Natural Resources states, "(Our) mission is to ensure that the First Foods are protected, restored, and enhanced for the perpetual cultural and economic benefit of the CTUIR. The First Foods - water, salmon, deer, cous, and huckleberry - represents a grouping of similar species, with salmon representing a variety of aquatic life forms (e.g. steelhead, lamprey, freshwater mussels, and various resident fish), deer (big game), cous (plant bulbs), and the huckleberry representing fruiting plants. Each of the First Foods, and the right to harvest them, are explicitly protected in the Treaty of 1855. It is crucial for the Tribes to cooperatively manage the remaining federal land to maximize the health of the First Foods (CTUIR letter, 2008)." BLM is not aware of any current tribal use or sacred sites in the analysis area, nor aware of any specific subsistence locations where tribal members presently procure traditional plants, fish or hunt game in the Powder River Canyon GU. However, a joint "First Foods" project developed between the Confederated Tribes of the Umatilla Indian Reservation and BLM to produce a geographic information system (GIS) predictive model provides some initial information that predicts where traditional plants and potential use areas may occur.

It is the BLM's position that actions taken to meet or move towards meeting the rangeland health standards would in turn benefit the whole ecosystem including "First Foods." BLM hopes to develop a partnership with CTUIR to accomplish some future monitoring of specific traditional plant locations. Findings from this project should provide data on how specific authorized actions may be beneficial or detrimental to these plant communities. Also see Human Uses and Values (Section 3.10)

History

Overland roads and trails are common modern world remains that were likely to be encountered in this APE. These roads often have long histories that could be associated with multiple time periods, historical themes, geographical boundaries and property types. The physical characteristics of overland roads might change over time as a reflection of new uses and the

evolution of technology. Evaluating the significance and integrity of the remains of historic roads and trails one must take all of this information into consideration. The Oregon Trail provides a typical example; graves, emigrant camps, and road engineering features are the most important property types associated the trail's historic context.

The Preemption Act of 1841 (Hibbard 1924:142) was initiated for the purpose of "Control speculation on lands improved by squatters." This act allowed settlers with improvements and six months residence to have the first right to buy land at a minimal price per acre. Individuals who traveled to the Willamette Valley from the east encouraged others to journey to the Oregon country to take advantage of this great opportunity. Few came at first, but later numbers accelerated as immigrants moved over what was to become known as the Oregon Trail.

In 1843 Caption John Fremont came to northeast Oregon to profile the Oregon Trail, recording vegetation, soils, topography, and the geology of the area. The Oregon Trail was used by Euro-American emigrants en route from Independence, Missouri to the Willamette Valley of Oregon. Between 1841 and 1863 over 43,000 persons reportedly reached the Willamette Valley using the wagon route. Although the Oregon Trail passed through Baker Valley, settlement was not established in the area until the 1860s with the discovery of gold.

As shown by the case histories, livestock grazing began with the arrival of miners and settlers during the second half of the 19th century. Overstocking of the available ranges during the late 1800s and overgrazing in the early 1900s caused widespread resource damage, compacting and eroding soils. (Elmore1992).

The growth of the livestock industry in eastern Washington and Oregon increased the number of animals beyond the area's carrying capacity (Platts 1991). By the 1920's overgrazing of public lands and drought conditions caused the range to further deteriorate to the extent that Congress passed the Taylor Grazing Act in 1934 to improve public rangelands. A federal report on the status of the condition of these rangelands indicated that ~50% of the Forest Service and BLM rangelands in the western United States were in fair to poor condition based on the vegetative potential (Government Accounting Office 1988).

Cultural Resource Setting and Condition

The Area of Potential Effect (APE) is the Salt Creek Allotment Grazing Management Analysis area where a Class III cultural resource inventory was completed to assess grazing impacts on cultural resources for the adjustment and renewal of a 10-year Bureau of Land Management (BLM) livestock grazing permit. Renewal of the grazing permit is considered an "undertaking" under Section 106 regulations implementing the provisions of the National Historic Preservation Act of 1966.

The Salt Creek Allotment covers a total of 4,328 acres, 1,963 acres of which are public lands and 2,365 acres are private lands. Included in this allotment is the Whiskey Gulch Pasture (866 acres) which is currently **"not meeting"** rangeland health standards. The remaining two pastures which "**are meeting"** rangeland health standards are; the Middle pasture consists of 1,811 (730 acres of

public lands and 1,081 acres of private lands), and South Pasture consists of 1,651 acres (367 acres of public and 1,284 acres of private lands).

Table 5. Area of Potential Effect (APE)

	Total Acres	Public Land	Private Land	Rangeland Health Standards
Salt Creek Allotment - (3) Pastures	4328	1963	2365	
Whiskey Gulch Pasture	866	866	0	**Not** Meeting
Middle Pasture	1811	730	1081	Are Meeting
South Pasture	1651	367	1284	Are Meeting

The "Salt Creek" livestock allotment is characterized by the "Upper Sonoran lifezone, and includes big and little sagebrush, various grasses, and sedges. The northern parcel includes an ephemeral drainage, with an unnamed developed spring, which maintains riparian vegetation including willow shrubs and invasive thistle. (D. Mullins, VB-12-01)

The Class III cultural resources inventory of the Salt Creek Allotment Project resulted in the identification of two newly recorded sites (35BA1358 and 35BA1359), four previously recorded sites (35BA137, 35BA148, 35BA154, and 35BA171), and one site not relocated (35BA173), and two isolated occurrences (IOs) (SC-10-1 and SC-10-2). Six sites (35BA137, 35BA148, 35BA154, 35BA171, 35BA1358, and 35BA1359) are recommended not eligible for the NRHP under any criteria. Livestock grazing has extensively impacted site 35BA148 and has minimally impacted sites 35BA137, 35BA171, and 35BA1359. No livestock grazing impacts were observed at sites 35BA154 or 35BA1358. The IOs are not eligible for the NRHP and no additional research or preservation of the IOs is required.

Table 6. Site Summary and Damage Assessment

Site Number	Assessed	Type	Eligibility	Site Condition
35BA137	10/26/2012	M/C	Not Eligible	Good - Site Damage >5% Animal Trampling, Road Construction, Animal Burrowing
35BA148	10/26/2012	M/C	Not Eligible	Poor - Site damage>60% Animal Trampling, Road Construction, Recreation Motorized, Animal Burrowing
35BA154	10/24/2012	H	Not Eligible	Excellent - Site damage = or < 5%Change
35BA171	10/26/2012	P	Not Eligible	Fair - Site Damage = or >40% Animal Trampling
35BA1358, (SC-FN-1)	10/26/2012	P	Not Eligible	Good - Site Damage >5% Erosion, Road, Recreation: Motorized
35BA1359, (SC-FN-2)	10/27/2012	H	Not Eligible	Fair - Site Damage = or >40% Animal Trampling
M/C=Multi Component **H** = Historic **P** = Prehistoric				

Despite all six sites being recommended as "Not Eligible" for the NRHP, protection measures have been established. Many agencies and archaeologists believe that there is no benefit in nominating a marginal site or district, because under Section 106 of the NHPA the same protection is afforded a site determined eligible for listing as one that is actually listed. As of this writing, no nomination to the National Register of Historic Places has been submitted for any of the documented sites, until such time as the currently identified sites (not including the isolates) can be adequately investigated, they are considered "potentially eligible" to the National Register and shall be treated as such.

Cultural resource identification in the Salt Creek Grazing Analysis focused on three primary types of resources: prehistoric archaeological sites, historic archaeological sites, and places that support resources of contemporary tribal interest. Throughout the APE previous surveys have identified a total of 6 heritage sites; this number reflects both historic and prehistoric sites that were considered not-eligible for inclusion in the NRHP. Of the 6 site forms, 4 site forms or 67% identified grazing as an expected impact or present effect. These determinations were based on observations regarding the site type, condition, use of livestock, and other compound factors such as increased erosion, vandalism, and visitation.

The condition of the complete archaeological record of both the prehistoric and historic periods within the projects' "Area of Potential Effect" varies (17% Poor, 33% Fair, 33% Good, 17% Excellent). All sites identified were currently being altered by: livestock grazing, road construction, dispersed recreation, and recreational vehicle impacts.

Paleontological Resources

No previously recorded paleontological resources are known to exist in the Powder River Canyon GU.

Effects on archeological resources by the existing grazing management strategy can be summarized into three major factors; artifact modification (breakage and/or edge damage); modified visibility; and artifact displacement. (Osborn, Vetter, Hartley, Walsh and Brown, 1987) Some heritage sites are more susceptible to disturbance by livestock than others dependent upon location such as: proximity to water. Trampling by animals causes horizontal and vertical displacement of artifacts by distorting the surface assemblage and elevating artifacts within the substrate. Overgrazing increases erosion potential, causing short-term exposure in surface protection increasing the potential for post-depositional movement of artifacts. Animal trampling also causes soil compaction which alters the character of sediments in archaeological deposits as well as the relationships between artifacts.

The sites with a historic component all have sustained impacts from 20th century land use. Resources that were deposited by cultural occupation during the 20th century are almost always situated at or very near to the surface of the ground and are therefore more vulnerable to other surface disturbances such as weathering, recreational trampling, burning, and artifact collecting.

A high percentage of both prehistoric and historic sites have been severely impacted by water development projects that occurred before the mid-1970s when cultural resource surveys were not required.

No increase in animal unit months (AUMs) are prescribed with this analysis, effects have been thoroughly assessed including an inventory of the high sensitivity areas, areas of cattle congregation, and developed areas. Effects considered under NEPA include cultural and historic. (40 CFR 1508.8) The term "cultural resources" covers a wider range of resources than "historic properties," such as sacred sites, archaeological sites not eligible for the National Register of Historic Places, and archaeological collections.

Alternative actions were formulated to make significant progress towards meeting management objectives and rangeland health standards, which is required under 43 CFR 4180.2(c). Four alternatives are analyzed in this assessment, these include:

Alternative 1(No Action Alternative)
Alternative 1, the terms and conditions of grazing use would remain unchanged. Animal Unit Months (AUMs) and season-of-use would remain at the current active use level. No new fences would be constructed.

With the No Action Alternative the existing condition would continue to degrade the affected cultural resources and associated context causing the BLM to be inconsistent with the Cultural Resource Management Direction identified in the Baker Resource Management Plan, 1989. Cattle use would continue to: displace cultural artifacts horizontally and vertically by trampling, compact and/or bioturbate the soil stratigraphy and increase the loss of surface vegetation that directly affects the overland surface erosion potential while exposing artifacts.

With the implementation of Alternative 1 the following may occur over the duration of this grazing management plan (0-10 years):

a. Trampling of artifacts causes horizontal and vertical displacement; this would continue to occur at the current rate. Trampling skews the surface assemblage by pushing smaller artifacts into the substrate. Animal trampling compacts the soil (Knoll and Hopkins, 1959), which alters the character of sediments in an archaeological deposit as well as the relationships between artifacts (Osborn, Vetter, Hartley, Walsh and Brown, 1987).
b. Compaction, a continuing increase of trampling of cultural sites by livestock on wet, heavy, hydric soils would be ongoing.
c. Ground cover on hydric soils would continue to degrade under Alternative 1, causing soil and water temperatures to elevate.
d. Surface Erosion, reduced water infiltration into soils will continue as a result of hoof compaction and the loss of vegetation. The reduced plant cover, litter, and organic matter would increase overland flow and erosion thus augmenting cultural resource disturbance.
e. The lack of alternative off-stream/spring water developments is expected to increase the duration of time cattle spend within the spring area and identified cultural sites.

Therefore, negative heritage site effects of livestock grazing are expected to be more severe with Alternative 1 and of greater duration, the "intensity" of these effects is also expected to be accelerated in Alternative 1 as a result of maintaining current management strategies and disturbance levels.

Alternative 2
Alternative 2, the BLM would not authorize livestock grazing within the entire Salt Creek Allotment, 4,328 acres, 1,963 acres are public lands. In order to eliminate livestock grazing on public lands within Salt Creek Allotment, the permittee would be required to construct five miles of new fence on the public land/private land boundary to prevent livestock from entering the allotment.

Alternative 2, the BLM would not authorize livestock grazing within the Salt Creek Allotment as a result of the construction and maintenance of five miles of new fence. Negative direct and indirect effects to cultural site protection under Alternative 2 would decrease and are similar to Alternative 4, with the exception of the continuation of cumulative effects from other activities such as recreation, recreational vehicles, and road use maintaining the "intensity" of these cumulative effects similar to Alternative 1, and Alternative 3.

Alternative 2 would require the construction of a 5 mile fence to eliminate livestock entering the analysis area. The BLM would not authorize livestock grazing in the Salt Creek Allotment and the fence is to be constructed to BLM specifications.

a. The trampling of artifacts by cattle would not occur, with the exception of trespass cattle. Trampling skews the surface assemblage by pushing smaller artifacts into the substrate. Animal trampling compacts the soil (Knoll and Hopkins, 1959), which alters the character of sediments in an archaeological deposit as well as the relationships between artifacts (Osborn, Vetter, Hartley, Walsh and Brown, 1987).
b. Compaction, a decrease in trampling of cultural sites would occur by eliminating livestock grazing on wet, heavy, hydric soils.
c. Ground cover on hydric soils would continue to improve under Alternative 2, triggering soil and water temperatures to cool down.
d. Surface Erosion, an increase in water infiltration into soils is expected as a result of less compaction and the increase of vegetation sustainability.
e. Infiltration would increase as a decrease of soil compaction occurs from the reduction of cattle hoof disturbances. An increase in plant cover, litter, and organic matter would decrease overland flow and erosion potential thus, reducing the existing cultural resource disturbances of concern.

Alternative 3
Alternative 3, the BLM would not authorize livestock grazing within Whiskey Gulch Pasture of Salt Creek Allotment. Since the perimeter of the pasture is currently fenced, this action would require no additional fences. Within the allotment, overall AUMs would be reduced to 159, which is the amount currently authorized in the South and Middle pastures.

Effects to cultural site protection under Alternative 3 are similar to Alternative 2.
Alternative 3 would increase vegetative cover of the cultural sites in the Whiskey Gulch Pasture by excluding cattle grazing. The vegetative cover reduces the exposure of cultural deposits and

soils to erosion. By implementing Alternative 3 the following may occur over the duration of this grazing management plan (0-10 years):

a. Trampling of artifacts by cattle causes horizontal and vertical displacement, this condition would be eliminated. Trampling skews the surface assemblage by pushing smaller artifacts into the substrate. Animal trampling compacts the soil (Knoll and Hopkins, 1959), which alters the character of sediments in an archaeological deposit as well as the relationships between artifacts (Osborn, Vetter, Hartley, Walsh and Brown, 1987).
b. Compaction, the elimination of trampling on wet, heavy, hydric soils from cattle on cultural sites should be eliminated.
c. Ground cover on hydric soils would continue to improve under Alternative 3, causing soil and water temperatures to lower.
d. Surface Erosion, an increase in water infiltration into soils is expected as a result of eliminating cattle hoof compaction and the consequential loss of vegetation, water infiltration would be improved by increased plant cover, litter, and organic matter thus reducing the overland flow and erosion potential.
e. The lack of alternative off-stream/spring water developments is expected to increase the time cattle spend within the spring/riparian areas of the remaining two pastures .

Alternative 4
Alternative 4 (proposed action) with this alternative the BLM would require the construction of a 1 mile riparian exclosure fence around the unnamed tributary to eliminate livestock entering the area. This exclosure would encompass 13 acres of Whiskey Gulch Pasture. In addition, the BLM would require the permittee to construct a stock water trough within 50 yards of the exclosure fence and pipe water from the unnamed spring. The BLM would not authorize livestock grazing in Whiskey Gulch Pasture until the fence and water development were constructed to BLM specifications.

Implementation of Alternative 4 would provide for the protection of cultural sites higher than the current rate of protection (Alternative 1), with respect to livestock grazing impacts. Alternative 4 proposes management improvements that would eliminate cattle grazing and trampling in the spring/wetland area. The spring development and enclosure would also protect cultural sites within the exclosure from other cumulative effects such as recreational vehicles and road use. By employing the Baker Resource Management Plan, 1989 requirements and meeting the utilization standards the following should occur over the duration of this grazing plan (0-10 years):

a. Trampling of artifacts causing horizontal and vertical displacement would be eliminated within the exclosure. Trampling skews the surface assemblage by pushing smaller artifacts into the substrate. Animal trampling compacts the soil (Knoll and Hopkins, 1959), which alters the character of sediments in an archaeological deposit as well as the relationships between artifacts (Osborn, Vetter, Hartley, Walsh and Brown, 1987).
b. Compaction, within the exclosure would be reduced as a result of eliminating the trampling of livestock on wet heavy soils.
c. Less Bare Ground, within the exclosure a decrease in vegetation consumed and trampled by livestock will occur.

d. Infiltration, a decrease in soil compaction from hoof action, will increase plant cover, litter, and organic matter, thus decreasing overland flow and erosion, enhancing the soil water content and plant growth, resulting in an increase of a protective cover for cultural sites.
e. Litter Layer, increases as a result of less removal of biomass by livestock grazing within the exclosure. Again, increasing a protective cover for heritage sites by enhancing the infiltration rates limits the runoff and erosion potential.

Therefore, negative trampling effects from livestock grazing are expected to be less with Alternative 4, than those analyzed for Alternatives 1, 2, and 3 as a result of the spring exclosure and trough relocation and are expected to be of less duration.

Cumulative Effects of Alternative 1
Cumulatively, the effect of other BLM activities in combination with the actions identified in Alternative 1, on cultural resources is expected to result in current disturbance levels over the short to long term (3+ years) these disturbance levels do not meet the Management Direction identified in the Baker Resource Management Plan (1989). In the consideration of other past, present, and future BLM activities it is apparent that Alternative1 would still yield negative cultural resource site disturbances and damage.

Cumulative Effects of Alternative 2
Cumulatively the effect of other BLM activities in combination with the actions identified in Alternative 2 on cultural sites is expected to result in increased protection from cattle grazing while negative effects to cultural resources from road use and motorized recreation will continue. Alternative 2 is expected to minimize negative cumulative effects and establish positive short to long-term effects as a result of eliminating grazing activities within the Salt Creek Allotment.

Cumulative Effects of Alternative 3
Cumulatively the effect of other BLM activities in combination with the actions identified in Alternative 3 on cultural sites is expected to result in increased protection from cattle grazing while; negative effects to cultural resources from road use and motorized recreation would continue. Alternative 3 is expected to have a greater positive short to long-term effects as a result of eliminating grazing activities within the Whiskey Gulch Pasture of the Salt Creek Allotment.

Cumulative Effects of Alternative 4
Cumulatively the effect of other BLM activities in combination with the actions identified in Alternative 4 on cultural sites is expected to result in increased cultural site protection. Alternative 4 is expected to have a greater positive short to long-term effects, as it would provide the spring exclosure and trough relocation that promotes immediate protection of cultural sites from road use and motorized recreation in addition to cattle grazing. Long-term reductions in erosion production are also expected under Alternative 4. The actions proposed within this alternative adequately considers and provides mitigation for many present and future actions.

Monitoring

Cultural resource specialists should be included on inter-disciplinary monitoring teams to assess current cultural site integrity trends. Based on information compiled above, systematic field visits should focus on the locations where a high potential for significant cultural resource values are vulnerable to grazing impacts. Based on cattle utilization trends and effects observed, specific mitigation or management actions have been designed to avoid adverse effects to cultural resources. These actions would serve as potential terms and conditions for reauthorized grazing permits or leases, or proposed measures in management plans. Condition and trend assessments should also supplement information provided in allotment management plans.

3.8 Rangeland/Grazing Use

3.8.1 Land Use Plan Management Objectives

The following grazing-related objectives/allocations for Powder River Canyon GU come from the Baker RMP (USDI 1989, pp 97-72):

- Restrict livestock grazing through seasons of use, utilization levels, and livestock numbers and distribution.
- Restrict livestock grazing for three to five growing seasons on all range rehabilitation projects.
- Exclude livestock grazing along identified stream segments, bogs and spring overflows where use is incompatible with riparian management problems.

3.8.2 Affected Environment

Salt Creek Allotment was formally adjudicated in 1965, which resulted in a reduction from 409 AUMS to 319 active AUMS. In 1967, Salt Creek Allotment was further reduced to 265 active AUMs, which was later increased in 1982 to its current level of 343. This increase in AUMs was a result of a new water well, cross fencing, and monitoring. Forage utilization from 1982 to the present in Salt Creek Allotment has ranged from 21 to 61 percent.

Rangeland health assessments were conducted in Salt Creek Allotment, beginning in 2007. Final determinations were made in 2012, which concluded that Rangeland Standards 2 and 4 were not met and livestock grazing was listed as a causal factor.

Other allotments in Powder River Canyon GU

Other allotments in Powder River Canyon GU either met rangeland health standards or did not meet all standards but current livestock grazing was determined not a significant cause. See Table 7 for details on these allotments, which are included in the description of the affected environment but will not be included in the management changes analyzed because no changes in management are proposed.

Table 7. Other Allotments in Powder River Canyon GU that Met Rangeland Health Standards and are not Considered in this EA.		
Allotment	**AUMs Active**	**Permitted Period of Use**
Big Creek #02012	282	04/16 to 06/21 09/22 to 11/17
Lower Powder #02030	78	04/16 to 05/15
Farley Hills #02060	42	04/16 to 05/15
Big Rattlesnake #02083	16	05/01 to 08/31
Powder River Canyon #02084	100	10/01 to 10/31

3.8.3 Alternative 1

Under Alternative 1, livestock management would not change from what is currently authorized. As a result, Alternative 1 would not adversely impact grazing levels, and thus not impact grazing permit holders.

3.8.4 Alternative 2

Under Alternative 2, the 343 AUMs that are currently authorized in Salt Creek Allotment would be eliminated, which is 39.8 percent of all AUMs permitted in Powder River Canyon GU. The loss of AUMs in Salt Creek Allotment would cause the livestock permittee to either downsize their operation or lease additional rangeland. See Section 3.9 Socioeconomics for the economic impacts of the reduced AUMs and costs of fence building/maintenance.

3.8.5 Alternative 3

Under Alternative 3, AUMs in Salt Creek Allotment would be reduced by 161, which would cause the livestock permittee to either downsize their operation or lease additional rangeland. See Section 3.9 Socioeconomics for the economic impacts of the reduced AUMs.

3.8.6 Alternative 4

There would be no permanent loss of AUMs under Alternative 4. As a result, the permit holder would not have to downsize their operation or lease additional rangeland.

3.8.7 Cumulative Impacts

This cumulative impacts analysis is limited to changes in AUMs in Salt Creek Allotment.

Past and Present Actions

Past seasons of use and levels of authorized livestock use were originally set during the adjudication in the 1950s and 1960s. These were adjusted at various times since then, primarily in the early 1980s based on the Ironside EIS (USDI 1981), and later as part of the Baker RMP (USDI 1989), which was also the Rangeland Program Summary. Allotment management plans were also developed to guide levels of grazing and season of use. These actions, along with a host of others beyond the control of the BLM, have all been factors affecting the current level of

grazing in Salt Creek Allotment. Overall, there has been a reduction of 66 AUMs in Salt Creek Allotment since 1965, when it was formally adjudicated.

Other than the current livestock use that has been identified in the affected environment discussion above, there are no present actions that impact rangeland/grazing use in Salt Creek Allotment.

Reasonably Foreseeable Actions

There are no projects proposed within the public land portion of Salt Creek Allotment that would affect livestock grazing. Therefore, no additional incremental effects to rangeland/grazing use would occur above what is listed in past and present actions.

Cumulative Effects by Alternative

Alternative 1

The cumulative, long-term impact under Alternative 1 would be a reduction of 66 AUMs in Salt Creek Allotment since 1965.

Alternative 2

The cumulative, long-term adverse impact under Alternative 2 would be a reduction of 409 AUMs since 1965, which is the complete elimination of livestock grazing in Salt Creek Allotment, with a short-term adverse impact of the livestock permittee needing to fence the private/BLM boundary.

Alternative 3

The long-term cumulative impacts of Alternative 1 would be a reduction of 227 AUMs since 1965.

Alternative 4

Long-term cumulative impacts under Alternative 4 would be the same as those identified under Alternative 1. There would also be a negligible adverse impact of the livestock permittee needing to check the water improvement on a more regular basis. .

3.9 Socioeconomics

3.9.1 Land Use Plan Management Objectives

The Baker RMP (USDI 1989) provides direction to continue to authorize grazing permits/leases while restricting or excluding grazing in areas where livestock use results in significant resource damage (p. 14).

3.9.2 Affected Environment

Assessment of the rangeland health standards has indicated that two of the five standards are not being met in Salt Creek Allotment. Current BLM regulations and guidance direct the BLM to make changes to livestock management in areas where standards are not being met. There is one permittee grazing livestock within this allotment.

The Salt Creek Allotment grazing permit is held by a local family-owned and managed livestock operation and is one of three allotments identified on permit 3606210 totaling 833 AUMs. The same family also holds permit 3606231 that has one allotment totaling 117 AUMS.

The 2002 Census of Agriculture for Baker County (U.S. Department of Agriculture [USDA] 2002) indicates that almost 72 percent of the farmland in Baker County is for pasture, with approximately 17 percent in cropland, 10 percent in woodland, and less than 1 percent in other uses. This highlights the importance of the livestock industry to Baker County. Although small or corporate classes of livestock operations both contribute social and economic benefits to eastern Oregon, economic challenge to smaller family operations is probably most likely to harm the social fabric of small communities. This would be especially true if permittees were forced to leave the area because of financial stress. Family operations are typically of great importance to county governments and even to some of the general public. The BLM is concerned about and aware of the potential socio-economic consequences of grazing permit actions. Nevertheless, permit renewal decisions in this analysis area must balance the need to reasonably support the social fabric and economies of small communities as well as maintain the public land natural resource base upon which the livestock industry relies. Thus, BLM decisions must be crafted in light of the public land's capacity to support livestock herds. And where the livestock carrying capacity is limited by rangeland site potential or where studies indicate that AUMs need downward adjustment, the BLM is compelled by law and by federal regulation to take actions that would result in sustainable grazing use and functioning rangelands, according to the S&Gs (USDI 1997) and 43 CFR§4180.

Ranch value and borrowing ability are usually based on cash flow. With a reduction in production capacity, holders of federal permits often reduce ranch value and borrowing ability. These reduced values often persist when the base property is sold or passed on to heirs since permits are historically reissued to the new owner of the base property.

Although holding a federal permit can create additional cash flow and wealth for individual ranchers, permits have no legally recognized value as private property. Terms and conditions of permits are commonly changed, especially at times of re-issuance or renewal. Changes in the timing and amount of permitted grazing would affect individual ranchers.

Limitations to BLM Socioeconomic Impact Estimates and Assumptions

The BLM has no access to individual permittee financial records and does not intend to request financial records from ranchers for socio-economic analysis purposes. Consequently, this EA section estimating socio-economic impacts to permittees would only address 1) AUM changes, and 2) increased or decreased rangeland project maintenance costs.

Because the BLM cannot conduct a thorough and accurate analysis of how permitted AUMs may affect individual ranchers economically, it is also not possible to predict accurately the consequences of reducing AUMs. This may or may not lead to existing ranches becoming economically unviable. The BLM also assumes that if existing ranches fail, some other corporation or individual may step in to purchase the base property and grazing privileges. It is not possible to foresee which base properties, if any, may change out of livestock production and into some other form of business. In the event that they do remain active for livestock production, the industry as a whole would continue to exist in and around the communities of Baker City and Medical Springs, but under different ownership and likely with reduced income.

Permanently reduced ranch income following base property sale may not be a certainty for several reasons:

- There may be avenues for supplementing livestock-generated income from ranch properties and adjoining public lands that have not been explored by existing permittee.
- There may be other possible opportunities that would allow permittee to remain within the community, but due to their nature, are unacceptable. Examples may include dude ranches, bed and breakfasts, or sale of hunting rights.
- Base property purchasers may not be under the same financial burden or income demand currently affecting the existing permittee. Thus, reduced income may not necessarily mean conversion of base property away from livestock production.
- Reduced livestock herds do not always result in insufficient income generation over the long term. Some permittees in the county choose to run reduced livestock numbers and they still make adequate profits derived from increased livestock weight gains instead of relying upon higher livestock numbers or AUMs.

The BLM is directed by the Taylor Grazing Act of 1934 to take actions that will stabilize the livestock industry that is dependent upon public rangeland forage. In light of the Vale Project, which seeded 100,000 acres of non-native annual grass to crested wheatgrass, and other rangeland development actions taken over the last 40 years, the Vale District BLM has attempted to meet this goal of stabilizing the industry. However, it may not be possible for Vale BLM to guarantee that every existing livestock permittee would survive as an economic unit or in a manner to which existing ranchers are accustomed. Where substantial downward AUM adjustments are necessary to meet the objectives for livestock grazing management in the Baker RMP (USDI 1989) and the S&Gs (USDI 1997) in conformance with 43 CFR § 4180, the livestock permittee could be forced into sale or lease of their base properties**.**

3.9.3 Alternative 1

This alternative would result in little or no economic disruption to the permittee's ranching operation in the short term. Since current management is not achieving rangeland health standards, it is reasonable to assume that over time authorized AUMs may need to be reduced if monitoring shows that the utilization standards and rangeland health standards cannot be achieved with the current level of AUMs, which would result in adverse economic impacts in the long term (3 years or more).

3.9.4 Alternative 2

Alternative 2 would result in long-term adverse economic impacts to the permittee's ranching operations in the form of reduced numbers of cattle or increased costs for finding and using alternative grazing areas due to the loss of 343 AUMs, which is over one third of this ranching operation's AUMs permitted on public lands. Downsizing the grazing operation would result in a gross reduction in revenue of approximately $31,920 per year. Finding additional private land pasture would increase costs by approximately $4,480 per year. In addition, the livestock permittee would need to pay for materials and construction cost to fence the private/BLM boundary, an estimated cost of $40,000 to $50,000, with a yearly maintenance cost of $500 to $1,000. Alternative 2 would thus result in the greatest economic burden to the livestock permittee, with the economic burden potentially causing the ranch to fail, which would be a major adverse economic impact to that particular ranch. If the existing ranch fails, some other corporation or individual would possibly step in to purchase the base property and grazing privileges. If this were the case, the adverse economic impact of a single ranch failure to the ranching industry within Baker County would be negligible to minor.

3.9.5 Alternative 3

Alternative 3 would result in long-term economic effects to the permittee's ranching operations in the form of reduced numbers of cattle or increased costs for finding and using alternative grazing areas due to the loss of 161 AUMs. Downsizing their operation would result in a gross reduction in revenue of approximately $15,410 per year, about half the lost estimated under Alternative 2. Finding additional private land pasture would increase costs by approximately $2,200 per year. Since the economic burden from loss of AUMs on the permittee would be roughly half of what would occur under Alternative 2, and there would be no costs associated in fence construction and maintenance, adverse impacts would be moderate as it would be less likely that the ranch would fail. Impact on the ranching industry within Baker County would be adverse and negligible.

3.9.6 Alternative 4

Alternative 4 would have a negligible adverse impact to the livestock grazing permit holder which would include maintaining an additional one mile of fence and the permit holder would also have to spend more time on the allotment to make sure the proposed water development is working properly. The BLM estimates that that the added cost to the livestock operator would be less than a $500 increase per year when compared to the No Action Alternative.

3.9.7 Cumulative Impacts

The cumulative impacts analysis for socioeconomics is based at both the individual ranch level and the Baker County ranching industry level.

Past and Present Actions

Aside from the AUM changes described in this EA under Alternatives 2 and 3, ranch viability (e.g., sustainable ranching operations capable of supporting families and paying for necessary additional help) would likely be influenced by factors beyond BLM control. These factors may

involve livestock price fluctuations, foreign competition, transportation and fuel costs, public land forage limitations due to drought, winter livestock feeding costs, private pasture rental fees, and other similarly unpredictable factors. These and other factors have already been affecting Baker County agriculture, as can be seen in the 2002 Census of Agriculture for Baker County (USDA 2002). According to this census, from 1997 to 2002, the number of farms decreased 7 percent, the land in farms decreased 9 percent, the average size of farms decrease 2 percent, and the market value of production decreased 8 percent in Baker County. The market value of production figures includes both crop and livestock sales with livestock sales accounting for approximately 76 percent of the total

Specific past actions that had an impact on the economics of grazing on public lands in Salt Creek Allotment include a reduction of 66 AUMs in since 1965, when it was formally adjudicated. This reduction would equate to a gross reduction in revenue of $6,317 per year in current markets.

Reasonably Foreseeable Actions

If utilization standards are not met in Salt Creek Allotment, cumulative effects to socioeconomics could include additional reductions in AUMs, season-of-use, and additional project costs, or a combination thereof. The permittee also grazes livestock on other BLM allotments. If standards are also not being met in these allotments, further impact to their ranching operations may occur, which could include reducing herd size, increasing grazing time on private land, and/or increased feeding time and costs. Although it is reasonable to foresee that this may occur, there are too many unknowns and variables to speculate what the economic impacts could be to the permittee.

3.9.8 Cumulative Effects by Alternative

Alternative 1

The cumulative, long-term impact under Alternative 1 would be a reduction of 66 AUMs since 1965, which in current markets would equate to a gross reduction in revenue of $6,317 per year. In terms of cumulative impacts on current use, there would be little or no economic or social disruption to the permittee's ranching operations in the short term under Alternative 1. However, current management is not achieving two rangeland health standards in Salt Creek Allotment. Over time, authorized AUMs may need to be reduced if monitoring shows that the utilization standards and rangeland health standards cannot be achieved with the current level of AUMs, which would result in some economic impact in the long term. The extent of that impact is difficult to estimate.

Alternative 2

Alternative 2 would result in more immediate economic impact due to a total reduction of 409 AUMs in Powder River Canyon GU since 1965, which in current markets would equate to a gross reduction in revenue of $39,146 per year. In addition, 5 miles of fence on the private/BLM boundary would need to be constructed. The estimated construction cost would be $40,000 to $50,000, while the yearly maintenance cost would be $500 to $1,000. Such a financial burden to

the permittee involved could cause the ranch to fail; however, there would not likely be a noticeable adverse impact on the ranching industry within Baker County.

Alternative 3

The long-term cumulative impacts of Alternative 3 would be a reduction of 227 AUMs since 1965, which in current markets would equate to a gross reduction in revenue of $21,726 per year. The financial burden to the permittee would not be as great as under Alternative 2 and there would be no additional short-term adverse impacts. Impacts to the ranching industry within Baker County would be negligible.

Alternative 4

Long-term cumulative impacts under Alternative 4 would be the same as those identified under Alternative 1. However, the threat of future AUM reductions would be greatly reduced as the 0.50 miles of riparian area along the unnamed tributary not meeting rangeland health standards would make significant progress towards meeting such standards under Alternative 4. In addition, the livestock permittee would be required to maintain the range improvements, which would cost less than 500 per year, which is considerably less when compared to Alternatives 2 and 3.

4 MITIGATING MEASURES

Mitigating measures are BLM administrative actions taken to reduce or eliminate adverse impacts resulting from BLM actions beyond those already described in Section 2.6 Design Features Common to All Action Alternatives.

Program standards and best management practices stated in the Vale District Programmatic Integrated Noxious Weed Management EA would be followed and would suffice for mitigating the effects regardless of the alternative chosen.

5 IRREVERSIBLE OR IRRETRIEVABLE COMMITMENTS OF RESOURCES

Under NEPA, an environmental analysis needs to include identification of any irreversible and irretrievable commitments of resources which would be involved in the Proposed Action should it be implemented. Irreversible resource commitments are related to the use of nonrenewable resources, such as soils, wetlands, and visual resources, and the effects that the uses of these resources would have on future generations. Such actions are considered irreversible because their implementation would affect a resource that has deteriorated to the point that renewal can occur only over a long period of time or at great expense, or because they would cause the resource to be destroyed or removed. Irretrievable resource commitment of resources means loss of production or use of resources as a result of a decision. It represents opportunities forgone for the period of time that a resource cannot be used. Irretrievable refers to the permanent loss of a resource including extinction of a threatened or endangered species, disturbance of a cultural site, loss of land production, or use of natural resources (including minerals and coal).

No Alternative identified in this EA would result in any irreversible or irretrievable commitments of resources within Powder River Canyon GU.

6 MONITORING

6.1 Rangeland Monitoring

Monitoring studies would be conducted in consultation with BLM grazing permittees and the interested public. The BLM would use approved interagency resource monitoring methods and apply professional judgment in determining if significant progress toward rangeland health is being achieved. The BLM monitoring data would be interpreted by an interdisciplinary team of professionals in light of the best available data. All such monitoring would be in accordance with the Baker RMP and Oregon State Office guidance to monitor and evaluate grazing systems and adjust the systems and stocking levels as appropriate to meet objectives (USDI 1988).

Upland trend plots and riparian trend plots would be the primary means of monitoring, supplemented by utilization.

Methods used would be those approved in Technical Reference 1734-3 for utilization (USDI 1996a), Technical Reference 1734-4 for trend (USDI 1996b), or the Oregon BLM Rangeland Monitoring Handbook.

6.2 Weeds monitoring

Known existing noxious weed sites would continue to be treated as priorities and funding allow under all of the alternatives. Monitoring for treatment effectiveness will occur annually. Periodic inventory for new sites will occur as funding allows.

6.3 Cultural monitoring

Known or newly identified cultural sites will be monitored for grazing effects at least once during the 10 year term of the grazing permit. Additional monitoring may be conducted in conjunction with rangeland monitoring in the area. Monitoring to identify and document livestock grazing effects at known archaeological sites would be conducted by heritage staff and trained staff to be supervised in the field.

If during the “First Food Project” surveys or BLM monitoring for rangeland health, areas of concern are identified, modifications to the grazing management systems may be made to address these areas of concern.

7 PEOPLE, AGENCIES, AND NATIVE AMERICAN TRIBES CONSULTED

The following were notified regarding the actions proposed within this EA:

• Permittees
• Confederated Tribes of the Umatilla Indian Reservation
• Hells Canyon Preservation Council
• Oregon State Historic Preservation Office
• Oregon Department of Fish and Wildlife
• Christopher Christie

7.1 Summary of Public Comments Received

At the public meeting the livestock permittee has raised concerns about the proposed water development being vandalized by the public.

8 LIST OF PREPARERS

Staff Member	Profession
Lori Wood	Field Manager
John Rademacher	ID Team Leader/Supervisory NRS
John Quintela	Fisheries Biologist
Kevin McCoy	Outdoor Recreation Planner
Melissa Yzquierdo	Wildlife Biologist/Botanist
Mike Woods	Range Conservationist
Katy Coddington	Archaeologist
Erin McConnell	Noxious Weed Specialist
Paula McBroom	Resource Assistant
Samantha Cisney	Noxious Weed Technician
Paul Leatherberry	GIS Specialist
Lilian Jonas	Writer/Editor

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10 SUPPORTING INFORMATION

10.1 Appendices

10.1.1 Appendix 1 – Oregon and Washington BLM Standards and Guidelines (S&Gs)

Standards for Rangeland Health

- *Standard 1* – Watershed Function – Uplands: upland soils exhibit infiltration and permeability rates, moisture storage, and stability that are appropriate to soil, climate, and landform.
- *Standard 2* – Watershed Function --Riparian/wetland areas: riparian-wetland areas are in properly functioning physical condition appropriate to soil, climate, and landform.
- *Standard 3* – Ecological Processes –Uplands: healthy, productive and diverse plant and animal populations and communities appropriate to soil, climate, and landform are supported by ecological processes of nutrient cycling, energy flow, and the hydrologic cycle.
- *Standard 4* – Water Quality: surface water and ground water quality, influenced by agency actions, complies with State water quality standards.
- *Standard 5* – Native, T&E, and Locally Important Species: habitats support healthy, productive, and diverse populations and communities of native plants and animals (including special status species and species of local importance) appropriate to soil, climate, and landform.

Guidelines for Livestock Grazing Management

1. The season, timing, frequency, duration and intensity of livestock grazing use will be based on the physical and biological characteristics of the site and the management unit in order to;

    - Provide adequate cover (live plants, plant litter and residue) to promote infiltration, conserve soil moisture and to maintain soil stability in upland areas
    - Provide adequate cover and plant community structure to promote streambank stability, debris and sediment capture, and floodwater energy dissipation in riparian areas.
    - Promote soil surface conditions that support infiltration
    - Avoid sub-surface soil compaction that retards the movement of water in the soil profile
    - Help prevent the increase and spread of noxious weeds
    - Maintain or restore diverse plant populations and communities that fully occupy the potential rooting volume of the soil
    - Maintain or restore plant communities to promote photosynthesis throughout the potential growing season
    - Promote soil and site conditions that provide the opportunity for the establishment of desirable plants
    - Protect or restore water quality
    - Provide for the life cycle requirements, and maintain or restore the habitat elements of native (including T&E, special status, and locally important species) and desired plants and animals.

2. Grazing management plans will be tailored to site-specific conditions and plan objectives. Livestock grazing will be coordinated with the timing of precipitation, plant growth and plant form. Soil moisture, plant growth stage and the timing of peak stream flows are key factors in determining when to graze. Response to different grazing strategies varies with differing ecological sites.

3. Grazing management systems will consider nutritional and herd health requirements of the livestock.

4. Integrate grazing management systems into the year-round management strategy and resources of the permittee(s) or lessee(s). Consider the use of collaborative approaches (e.g., Coordinated Resource Management, Working Groups) in this integration.

5. Consider competition for forage and browse among livestock, big game animals, and wild horses in designing and implementing a grazing plan.

6. Provide periodic rest from grazing for rangeland vegetation during critical growth periods to promote plant vigor, reproduction and productivity.

7. Range improvement practices will be prioritized to promote rehabilitation and resolve grazing concerns on transitory grazing land.

8. Consider the potential for conflict between grazing use on public land and adjoining land uses in the design and implementation of a grazing management plan.

10.1.2 Appendix 2 – Potential Species of Concern for Powder River Canyon GU

Species	Listed As	Present on Site	Description
Avian Species			
Bald eagle (*Haliaeetus Leucocephalus*)	T	No known occurrence	Inadequate habitat
Yellow-billed cuckoo (*Coccyzus americanus*)	CS	No known occurrence	Inadequate habitat
Northern goshawk (*Accipter gentilis*)	SC	No known occurrence	Inadequate habitat
Western burrowing owl (*Athene cunicularia hypugea*)	SC	Possible	Supportive habitat
Ferruginous hawk (*Buteo regalis*)	SC	Possible	Supportive habitat
Greater sage-grouse (*Centrocerus urophasianus*)	SC	Yes	Supportive habitat
Olive-sided flycatcher (*Contopus cooperi*)	SC	No known occurrence	Inadequate habitat
Willow flycatcher (*Empidonax trailli adastus*)	SC	No known occurrence	Inadequate habitat
Yellow-breasted chat (*Icteria virens*)	SC	No known occurrence	Inadequate habitat
Lewis' woodpecker (*Melanerpes lewis*)	SC	No known occurrence	Inadequate habitat
Mountain quail (*Oreortyx pictus*)	SC	No known occurrence	Inadequate habitat
White-headed woodpecker (*Picoides albolavatus*)	SC	No known occurrence	Inadequate habitat
Mammal Species			
Pygmy rabbit (*Brachylagus idahoensis*)	SC	Possible	Supportive habitat
Pale western big-eared bat (*Corynorhinus townsendii pallescens*)	SC	No known occurrence	Species occurrence not known
California wolverine (*Gulo gulo luteus*)	SC	No known occurrence	Inadequate habitat
Silver-haired bat (*Lasionycteris noctivagans*)	SC	No known occurrence	Potential habitat/ unsurveyed
Small-footed myotis (bat) (*Myotis ciliolabrum*)	SC	No known occurrence	Potential habitat/ unsurveyed
Long-eared myotis (bat) (*Myotis evotis*)	SC	No known occurrence	Potential habitat/ unsurveyed
Fringed myotis (bat) (*Myotis thysanodes*)	SC	No known occurrence	Potential habitat/ unsurveyed
Long-legged myotis (bat) (*Myotis volans*)	SC	No known occurrence	Potential habitat/ unsurveyed
Yuma myotis (bat) (*Myotis yumanensis*)	SC	No known occurrence	Potential habitat/ unsurveyed
California bighorn (*Ovis canadensis californiana*)	SC	No known occurrence	Inadequate habitat
Preble's shrew (*Sorex preblei*)	SC	No known occurrence	Supportive habitat
Fish Species			
Bull trout (Columbia River Basin) (*Salvelinus confluentus*)	T/CH	Historic/No known occurrence	Inadequate habitat
Interior redband trout (*Oncorhynchus mykiss gibbsi*)	SC	Yes	Supportive habitat
Amphibian and Reptile Species			
Columbia spotted frog (*Rana luteiventris*)	CS	No known occurrence	Inadequate habitat
Tailed frog (*Ascaphus truei*)	SC	No known occurrence	Inadequate habitat
Northern sagebrush lizard (*Sceloporus graciosus graciosus*)	SC	No known occurrence	Inadequate habitat
Plant Species			
Howell's spectacular thelypody (*Thelypodium howellii ssp. Spectabilis*)	T	No known occurrence	Inadequate habitat
Slender moonwort (*Botrychium lineare*)	CS	No known occurrence	Inadequate habitat
Wallowa ricegrass (*Achnatherum wallowaensis*)	SC	No known occurrence	Inadequate habitat
Upward-lobed moonwort (*Botrychium ascendens*)	SC	No known occurrence	Inadequate habitat
Crenulate grape-fern (*Botrychium crenulatum*)	SC	No known occurrence	Inadequate habitat
Mountain grape-fern (*Botrychium montanum*)	SC	No known occurrence	Inadequate habitat
Twin spike moonwort (*Botrychium paradoxum*)	SC	No known occurrence	Inadequate habitat
Stalked moonwort (*Botrychium pedunculosum*)	SC	No known occurrence	Inadequate habitat
Clustered lady's-slipper (*Cypripedium fasciculatum*)	SC	No known occurrence	Inadequate habitat
Cronquist's stickseed (*Hackelia cronquistii*)	SC	No known occurrence	Inadequate habitat
Red-fruited desert parsley (*Lomatium erythrocarpum*)	SC	No known occurrence	Inadequate habitat
Cusick's lupine (*Lupinus lepidus var. cusickii*)	SC	No known occurrence	Inadequate habitat
Oregon semaphore grass (*Pleuropogon oregonus*)	SC	No known occurrence	Inadequate habitat
Snake River goldenweed (*Pyrrocoma radiata*)	SC	No known occurrence	Inadequate habitat
Biennial stanleya (*Stanleya confertifl*)	SC	No known occurrence	Inadequate habitat

(E) - Listed Endangered (T) - Listed Threatened (CH) - Critical Habitat has been designated for this species (CS) - Candidate Species
(PE) - Proposed Endangered (PT) - Proposed Threatened (PCH) - Critical Habitat has been proposed for this species (SC) - Species of Concern

10.1.3 Appendix 3 – Abbreviations and Acronyms

AUM	Animal Unit Month
BLM	Bureau of Land Management
CFR	Code of Federal Regulations
CTUIR	Confederated Tribes of the Umatilla Indian Reservation
DNA	Determination of NEPA Adequacy
EA	environmental assessment
EIS	environmental impact statement
EPA	Environmental Protection Agency
ESA	Endangered Species Act
GIS	geographic information system
GU	geographic unit
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NRCS	Natural Resources Conservation Service
ODFW	Oregon Department of Fish and Wildlife
OHV	Off-highway vehicle
OSHPO	Oregon State Historic Preservation Office
PFC	Proper Functioning Condition
RMP	Resource Management Plan
ROW	Right-of-way
S&Gs	Standards for Rangeland Health and Guidelines for Livestock Management
T&E	Threatened and Endangered
TMDL	total maximum daily load
USDA	U.S. Department of Agriculture
USDI	U.S. Department of the Interior
USFWS	U.S. Fish and Wildlife Service